

SOUTHERN POWER AND INDUSTRY

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NOVEMBER, 1951

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REPORTS FROM SOUTHERN PLANTS

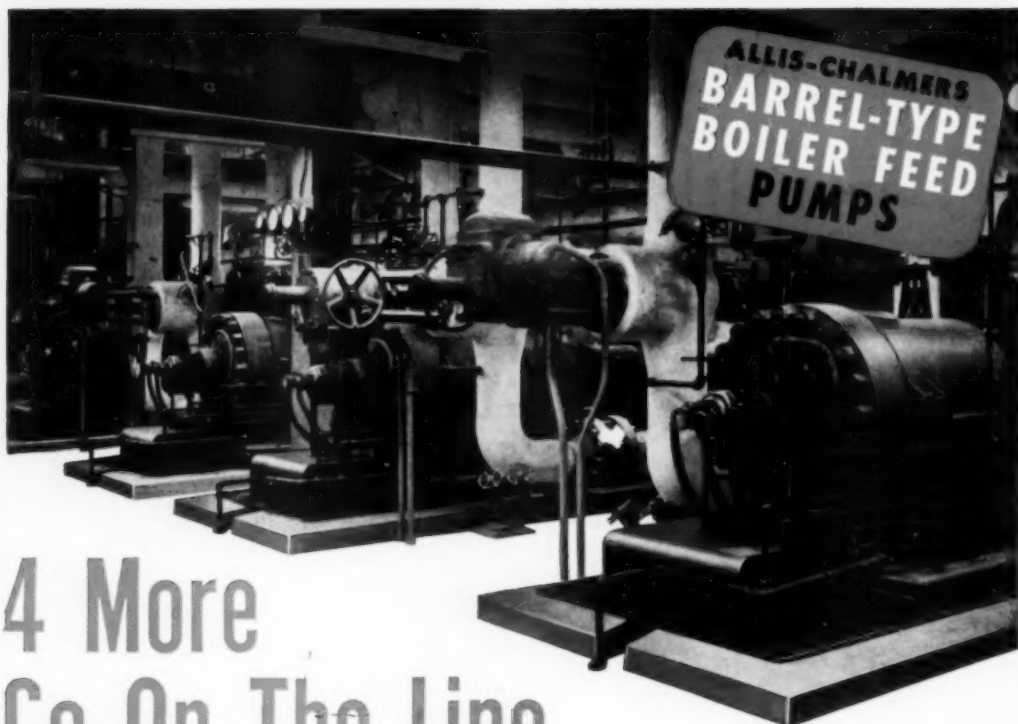
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troubles . . . what to do

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4 More Go On The Line

AT NEW HAWTHORN STATION, KANSAS CITY

Over 50 of these pumps have been bought by utilities on their proved performance record.

NEWEST PLANT OF KANSAS CITY POWER & LIGHT CO. is the Hawthorn Steam Electric Station on the Missouri River. This station, designed with every modern feature for dependability and low cost operation, has an initial capacity of 132,000 kw from two turbines and is already building an addition that will add almost another 100,000 kw from one additional turbine.

The boiler feed pump arrangement, pictured above, consists of four Allis-Chalmers 8" x 8" barrel-type boiler feed pumps with a capacity of 700,000 pounds per hour each at a discharge pressure of 1625 psig. They are driven by 1750 hp, 3600 rpm motors.

The unit now under construction also will be served by Allis-Chalmers barrel-type boiler feed pumps. Three pumps with a capacity of 425,000 pounds per hour at 1815 psig

driven by 1250 hp, 3600 rpm motors are now being built.

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Sizes range from 1200 to 3000 psig and from 300 to 2500 gpm. Allis-Chalmers can supply the complete boiler feed pump installation including pump, motor and control of coordinated design and manufacture.

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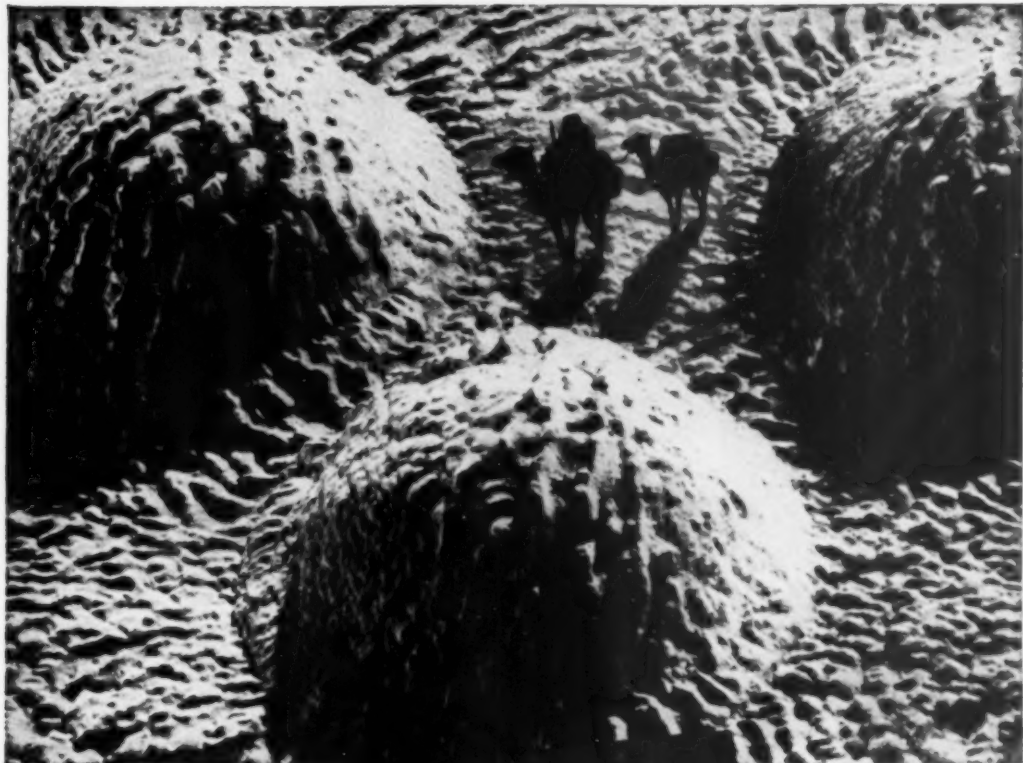
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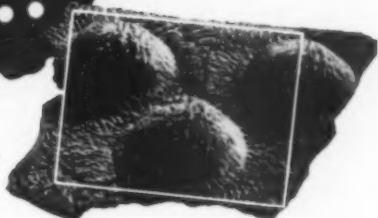
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Rectangle in small photo shows area of scale sample in large illustration. "Hills" are scale-covered rivet heads. Approximate size of sample: 7" x 5". Nalco Laboratory photo.

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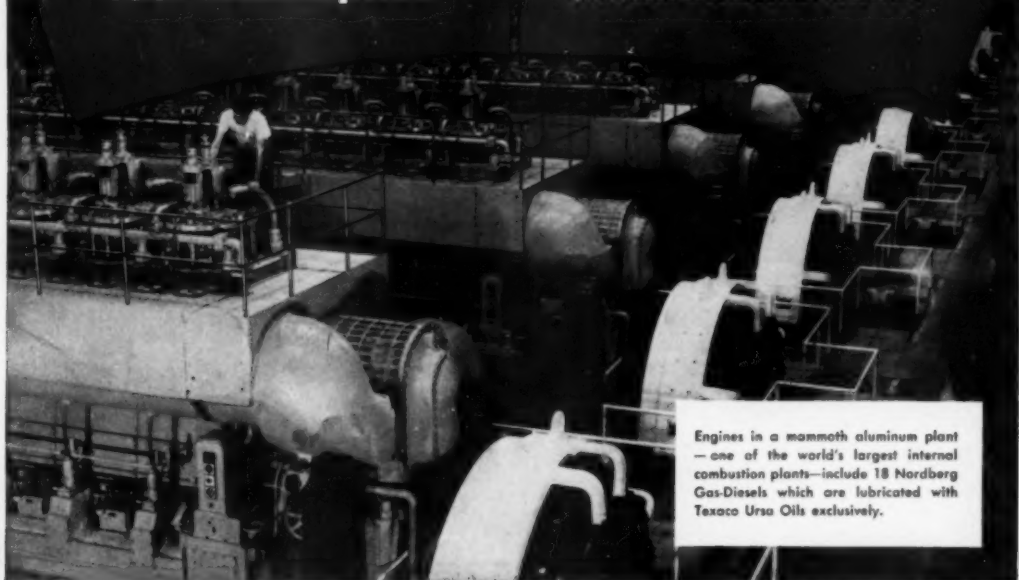
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SOUTHERN POWER AND INDUSTRY

NOVEMBER
1951



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Facts and Trends

FOR SOUTHERN INDUSTRIAL AND POWER EXECUTIVES

November, 1951

WHAT ARE YOU BURNING? Corn cobs, coffee refuse, hogged wood, tobacco stems, oat hulls, coconut shells and bark are being used throughout the South and Southwest. Detroit Stoker Company's excellent bulletin 505 describes installational and operating data on 20 spreader stoker installations burning refuse fuel separately or in conjunction with auxiliary fuels, such as coal, oil, or gas.

The Wood Mosaic Company of Louisville and West Virginia Pulp & Paper installations at Charleston, S. C., and Covington, Virginia, are prominently featured in the bulletin. For your complimentary copy circle item B-11 on the page 16 postage free service post card.

PROGRESSIVE LUMBER MANUFACTURERS, seeing a more stable source of supply and a more stable economic condition in their industry, are planning the modernization of old mills and the construction of new mills on a permanent basis. Initial phase of a huge modernization program at the Southern Pine Lumber Company of Diboll, Texas, has been completed, making the mill one of the most up-to-date and streamlined operations in the country.

First portion of the project—the manufacture, handling and processing of lumber between the sawmill and rough storage facilities—is reported in this issue of SP&I by members of the staff of H. E. Bovay, Jr., consulting engineering firm of Houston, Texas. Southern Pine's new modern wood treating plant will be described in the December issue.

ALCOA'S \$80 MILLION LIGNITE-FUELED aluminum reduction plant is now under construction at Rockdale, Texas (see SP&I for Sept., p. 120). Power plant is being designed and constructed and will be operated for Alcoa by the Texas Power & Light Company. Initially, the power generating plant will be supplied with lignite, which has been crushed and dried for use directly as fuel. Later, according to present plans, a carbonization plant would be installed to remove low-temperature tars from the lignite. Remaining "char" would be used for fuel, and valuable chemical by-products would be recovered from the tars by distillation.

HAVING MOTOR TROUBLE? Four well-known symptoms, causes and suggested maintenance procedures are featured in a three page photo-maintenance report in this issue. If your motor doesn't turn over, and is quiet; if it doesn't turn over, but growls and is noisy; if it does turn over but will not get up to speed; or if it gets up to speed but runs too hot, find out what to do in **HINTS ON MOTOR MAINTENANCE** in this issue.

NEED SOME CLEAN AIR? The Cambridge Corporation is producing a pleated paper, absolute air filter capable of removing better than 99.98 per cent of all dust, smoke, fumes, radioactive particles, spores, etc., from the air. Filter is available in two standard sizes, with rated capacities of 500 and 850 cfm. Filtering material is a soft, felt-like paper made of specially treated pulp containing very fine asbestos fibers. Paper is folded and packed into the filter in an accordion pleat arrangement to provide an extensive filtering area within a small space.

PALLETLESS HANDLING is extensively employed in corrugated shipping container manufacturing operations at the Krafco Container Corporation's West Monroe, Louisiana plant. Transportation of corrugated sheets to and from various cutting and finishing operations is accomplished by

five Clark Pul-Pacs. Combination push and pull attachment has a load carrying plate, pusher rack, and gripper jaw. Carrying plate, replacing ordinary forks of a truck, holds and supports load.

Scrap sheets of corrugated board are laid on the floor and good sheets stacked on top, leaving scrap sheet protruding about 6-in. As truck approaches, flap enters gripper jaw; jaw is closed and rack retracted, drawing load onto carrying plate. Pusher rack removes the load. Loads are generally about 6 ft high.

STEAM COST CALCULATIONS SIMPLIFIED with new and modernized "slide rule" of Cleaver-Brooks Company. Pocket size calculator enables user to compute comparative steam costs per 1000 lb using coal, oil, or gas—and based on fuel costs of price per ton, price per gallon, and price per cu ft. Request rule from Cleaver-Brooks Company, 365 E. Keefe Ave., Milwaukee 12, Wisc.

AIR CONDITIONING ON A BIG SCALE—A 2200 refrigeration plant, coordinated with a 10 station air conditioning and distribution system supplies individual requirements for each of the 8 sections of the new 64,000 spindle spun rayon plant of Robbins Mills, Inc., at Raeford, North Carolina. Southern Power & Industry's report, based on information furnished by the Atlanta District, Carrier Corporation, is scheduled for early publication.

Combined capacity of all pumps installed in the Raeford plant is 43,000,000 gallons per day. Total air handling capacity of all systems is 1,158,000 cfm. Entire volume of air handled in a year is equivalent to a 4 ft layer over the State of North Carolina. Complete air conditioning system requires 3,600 connected horsepower. Refrigeration machines have a capacity sufficient to make 4,400,000 lb of ice each 24 hours—a block of ice 20 ft x 35 ft at the base, and as high as a ten story building.

THE THIRD PLANT MAINTENANCE SHOW AND CONFERENCE will be held at Convention Hall, Philadelphia, January 14-17th. Over 200 companies will display products and services necessary for plant maintenance. Six general conferences will consider basic problems of all industry while 27 sectional meetings will be devoted to specialized subjects of interest to particular industries. Both conference sessions and exhibits will place the principal stress on preventive maintenance. Advance registration cards and hotel information may be obtained from Clapp & Poliak, Inc., 341 Madison Ave., New York 17, N. Y.

"MORE PRODUCTION AHEAD"—Westinghouse Electric's travelling exhibit on modern power distribution methods has recently completed its South-eastern tour. Exhibit is a three dimensional model factory and coverage includes, bus duct, efficient sources of low-voltage power, protection against dangerous overloads and short circuits, and capacitors.

Southwestern schedule is as follows: November 13 - Beaumont; 15th - Corpus Christi; 19th - San Antonio; 22nd - Fort Worth; 26th - El Paso; 27th - Albuquerque, N. M.; 30th - Lubbock; December 3rd - Amarillo; 5th - Oklahoma City; 6th - Wichita, Kansas; 10th - Tulsa; 12th - Little Rock; and December 13th - Memphis.

COOLING TECHNIQUE FOR LARGE TURBINE GENERATORS, developed by Westinghouse, consists of blowing hydrogen gas at high velocity through specially-constructed hollow generator coils. This brings hydrogen, the cooling medium, in direct contact with the copper in which the heat is generated. Development applicable to units for ratings of 90,000 kw and above. The improved cooling makes possible the construction of ratings much larger than now possible with conventional hydrogen cooling. Ratings of 3600 rpm single-unit generators of 250,000 to 275,000 kw now appear possible at power factors and stability characteristics suitable for the large electric utility systems.

Write the editors for additional information on any of the above items.
SOUTHERN POWER & INDUSTRY 806 Peachtree St., N.E. Atlanta 5, Ga.

A user **REPORTS...**

After their satisfactory experience with the 500,000 C. M. insulated aluminum cable (at right), National Supply Co., Torrance, Cal., says, "We will seriously consider aluminum when similar installations are planned." These cables, insulated with RH 600 v. U. S. Paracore, are connected to bus, from which they carry current to distribution panels for such heavy loads as welding machines, shears, rolls and other equipment.

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Aluminum Conductors

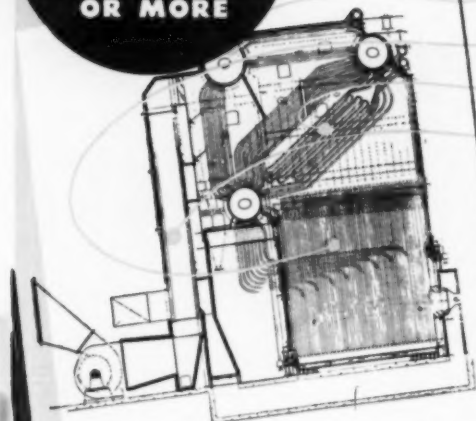


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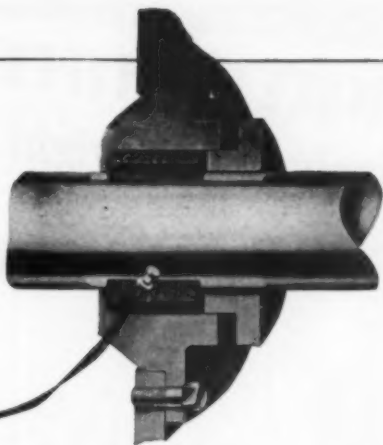
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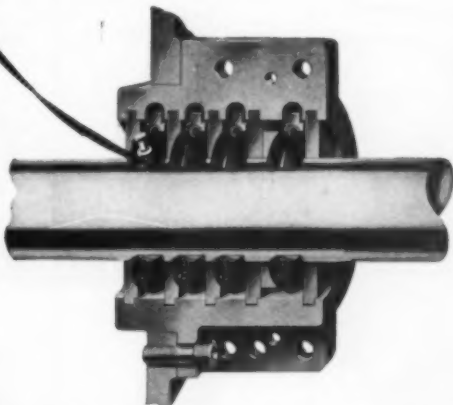
When you buy turbines rated close to your exact horsepower needs, you save plenty of money. That's because turbines are generally priced in proportion to their size. The wide range of sizes of Coppus Turbines promises purchasing economy for you from the 150 hp size down to the smallest. As for operating and maintenance economies, you get them, too, from such other features as: greater number of manually operated valves for individual control of steam nozzles; replaceable cartridge-type bearing housings and others. For complete details . . .



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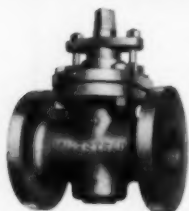
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Three-way—Screw or Flanged Ends



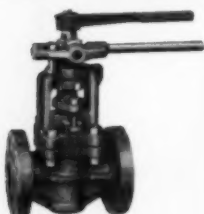
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HOMESTEAD CAM-SEAL, QUARTER-TURN PLUG VALVES

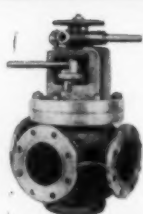
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Four-way—Flanged or Screw Ends

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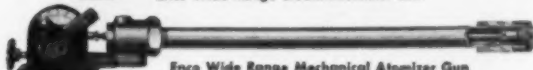
Standard Range Mechanical—Available in all sizes to suit load and capacity requirements.



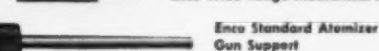
Enco Standard Range Mechanical Atomizer Gun



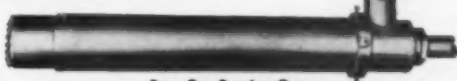
Enco Wide Range Steam Atomizer Gun



Enco Wide Range Mechanical Atomizer Gun

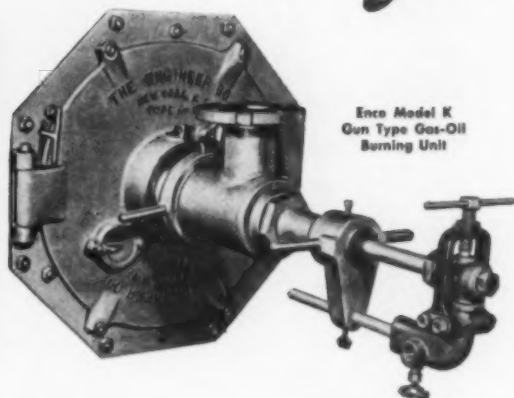


Enco Standard Atomizer Gun Support

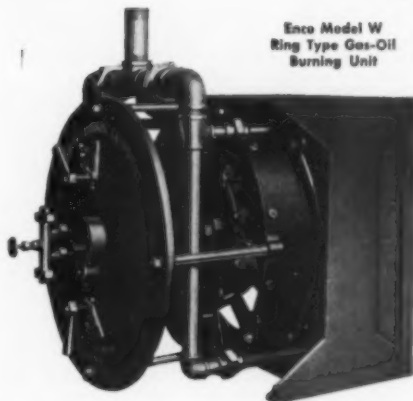


Enco Gas Burning Gun

EC-403



Enco Model K
Gun Type Gas-Oil
Burning Unit



Enco Model W
Ring Type Gas-Oil
Burning Unit

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Hookers Point Station, Tampa Electric Company



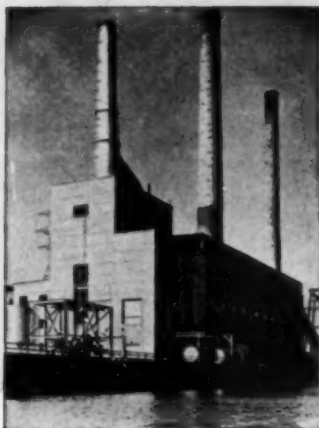
Possum Point Station, Virginia Electric & Power Co.



Louisiana Station, Gulf States Utilities Company



Venice No. 2 Plant, Union Electric Power Company



Riverside Station,
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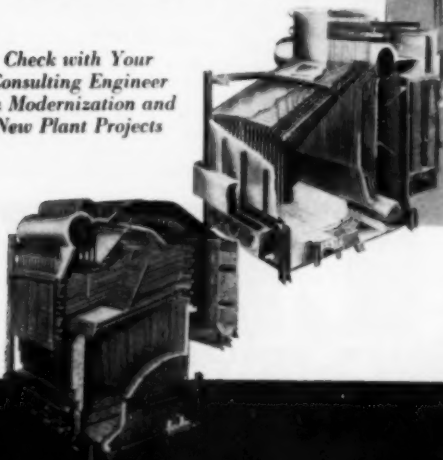
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■ Users like Springfield Steam Generating Units! Less than a year after installation of a new 80,000 lb. Springfield unit, one of America's leading manufacturers of electrical parts for automobiles has "repeated" with an additional 80,000 lb. unit and a 100,000 lb. unit which are similar in design to the original 80,000 lb. unit.

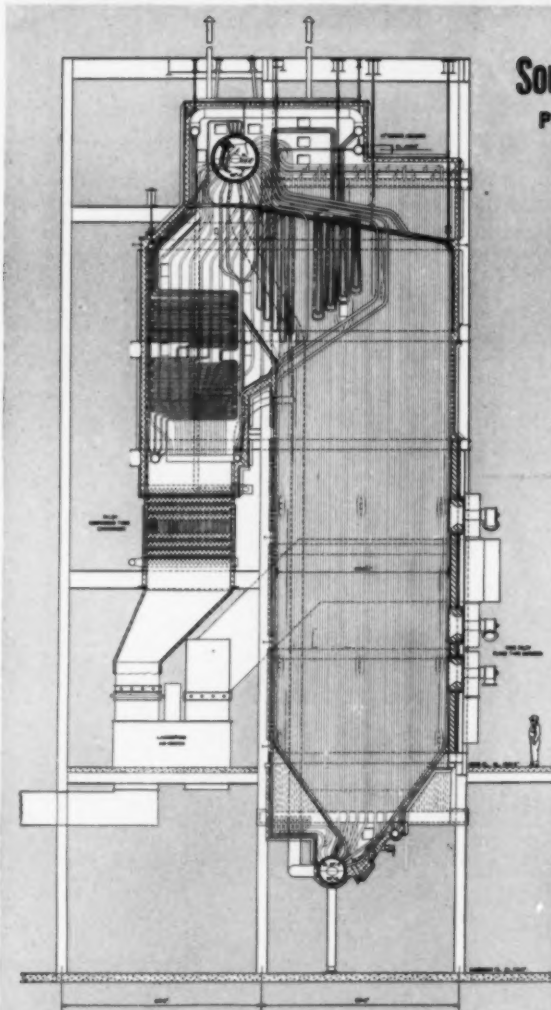
Springfield's experience in building modern steam generating units is paying dividends for many industrial plants today. In Springfield designs, users get values that go beyond specifications. For Steam Generating Units that "are built to stay modern longer", check with Springfield — ANY SIZE ... ANY PRESSURE ... ANY TEMPERATURE ... AND FOR ANY FUEL! We will be glad to submit a proposal covering your requirements.

Check with Your
Consulting Engineer
on Modernization and
New Plant Projects



This 2-drum Springfield Steam Generator is designed for 225 psig and operates at 150 psig. The design features a completely water cooled furnace, economizer, forced and induced draft fans, and dust collector. Firing is by traveling grate spreader stoker.

South Carolina Installing Their



SOUTH CAROLINA ELECTRIC & GAS COMPANY
Charleston, S. C.
400,000 lbs./hr. Riley Unit

South Carolina Electric & Gas Co.

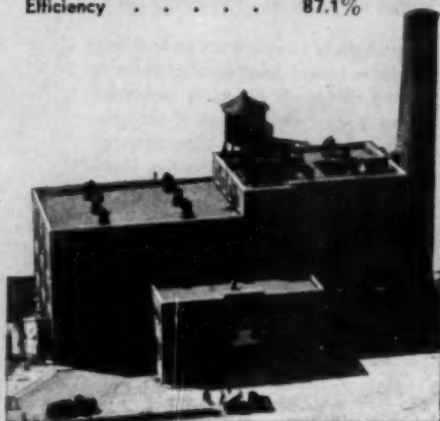
PLANT HAGOOD, CHARLESTON, S. C.

Gilbert Associates, Engineers

Capacity	400,000 lbs./hr.
Design Pressure	1475 psig
Steam Temperature	955°F.
Exit Gas Temperature	330°F.
Temperature Air	600°F.
Efficiency	87.1%
Initially Oil Fired—Future Pulverized Coal	

HEAT BALANCE

Dry Gas Loss	5.06
Hydrogen and Moisture Loss	5.82
Moisture in Air Loss	0.12
Radiation Loss	0.40
Manufacturers Margin	1.50
Total Losses	12.90
Efficiency	87.1%



First Unit at Plant Hagood. Second Unit has been added.
Third Unit being installed.



RILEY

STOKER CORPORATION, WORCESTER, MASS.

Boston New York Philadelphia Washington Buffalo Pittsburgh Cleveland Detroit Chicago
Cincinnati Atlanta New Orleans St. Louis Kansas City St. Paul Tulsa Houston Denver
Salt Lake City Los Angeles Portland Seattle

BOILERS • PULVERIZERS • BURNERS • STOKERS • SUPERHEATERS • FLUE GAS SCRUBBERS

Third Riley Unit at Plant Hagood

When South Carolina Power Company built Plant Hagood back in 1946, a 230,000 lbs./hr. 975 psig 860°F. Riley Steam Generating Unit was selected for unit No. 1. In 1948 when unit No. 2 was added, a duplicate Riley unit was ordered. Last year, another Riley unit—400,000 lbs./hr. 1475 psig 955°F. unit was ordered as unit No. 3.

After a company has operated Riley equipment, they almost invariably order additional Riley equipment when additional units are added. Public Service Company of Indiana, for instance, has ordered 7 Riley units; Iowa-Illinois Gas & Electric, 6 Riley units; Interstate Power, 7 Riley units; Houston Lighting & Power Co., 9 Riley units; Utah Power & Light, 4 Riley units; Central Ohio Light and Power, 5 Riley units.

The regularity with which Riley Steam Generating unit users repeat for additional Riley units when plants are expanded is positive proof of the excellent performance of Riley units—their reliability and continuity of service and the satisfactory service rendered by the Riley organization.

All of these public utilities have ordered Riley Steam Generating Equipment:

THE POTOMAC EDISON CO.	
Albright Station	1-700,000 lbs./hr.
IOWA ELECTRIC LIGHT & POWER CO.	
Boone Station	1-275,000 lbs./hr.
NORTHERN STATES POWER CO.	
Granite Falls Station	1-385,000 lbs./hr.
SOUTH CAROLINA PUBLIC SERVICE AUTHORITY	
Moncks Corners Station	2-460,000 lbs./hr.
MONTICANELLA POWER COMPANY	
Albright Station	1-700,000 lbs./hr.
SUPERIOR WATER, LIGHT & POWER CO.	
Superior Station	1-125,000 lbs./hr.
HOUSTON LIGHTING & POWER CO.	
Gable Street Station	1-140,000 lbs./hr.
Gable Street Station	1-250,000 lbs./hr.
Gable Street Station	1-350,000 lbs./hr.
Greens Bayou Station	2-675,000 lbs./hr.
West Junction Station	2-400,000 lbs./hr.
West Junction Station	2-825,000 lbs./hr.
PUBLIC SERVICE CO. OF INDIANA	
Dresser Station	1-300,000 lbs./hr.
Edwardport Station	3-400,000 lbs./hr.
Noblesville Station	3-300,000 lbs./hr.
NORTHERN VIRGINIA POWER CO.	
Riverton Station	1-350,000 lbs./hr.
CENTRAL ILLINOIS LIGHT CO.	
R. S. Wallace Station	1-600,000 lbs./hr.
R. S. Wallace Station	4-300,000 lbs./hr.
ARKANSAS POWER & LIGHT CO.	
Cecil Lynch Station	1-650,000 lbs./hr.
UTAH POWER & LIGHT CO.	
Orwen Station	1-450,000 lbs./hr.
Jordan Station	1-620,000 lbs./hr.
Jordan Station	1-575,000 lbs./hr.
WORCESTER COUNTY ELECTRIC CO.	
Webster Street Station	1-325,000 lbs./hr.
WEST PENN POWER CO.	
Milesburg Station	2-210,000 lbs./hr.
INTERSTATE POWER CO.	
Dubuque Station	1-200,000 lbs./hr.
Lanning Station	2-120,000 lbs./hr.
Fish Lake Station	2-120,000 lbs./hr.
Clinton Station	1-45,000 lbs./hr.
NEW ORLEANS PUBLIC SERVICE CO.	
Market Street Station	1-330,000 lbs./hr.
IOWA-ILLINOIS GAS & ELECTRIC CO.	
Riverside Station	3-250,000 lbs./hr.
Coralville Station	1-60,000 lbs./hr.
Moline Station	2-200,000 lbs./hr.
CITY OF LOS ANGELES	
Harbor Steam Station	3-825,000 lbs./hr.
Harbor Steam Station	2-675,000 lbs./hr.
MISSISSIPPI POWER CO.	
Plant Eaton	3-230,000 lbs./hr.
OTTER TAIL POWER CO.	
Kidder Station	2-100,000 lbs./hr.
Crookston Station	2-75,000 lbs./hr.
Devils Lake Station	1-75,000 lbs./hr.
Canby Station	1-75,000 lbs./hr.
OHIO EDISON CO.	
Mad River Station	1-250,000 lbs./hr.
SOUTH CAROLINA POWER CO.	
Plant Hagood	2-230,000 lbs./hr.
Plant Hagood	1-900,000 lbs./hr.
GULF POWER CO.	
Pensacola Station	2-230,000 lbs./hr.
Pensacola Station	1-325,000 lbs./hr.
UNION ELECTRIC CO. OF MISSOURI	
Ashley Street Station	2-285,000 lbs./hr.
Ashley Street Station	3-310,000 lbs./hr.
CENTRAL OHIO LIGHT & POWER CO.	
Woodcock Station	2-120,000 lbs./hr.
Woodcock Station	1-90,000 lbs./hr.
Woodcock Station	2-60,000 lbs./hr.
PENNSYLVANIA ELECTRIC CO.	
Williamsburg Station	1-300,000 lbs./hr.
CAROLINA POWER & LIGHT CO.	
Monrovia Station	2-330,000 lbs./hr.

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501	506	509	520	527	538	542	583	591	602	621	634	680	692	706	717
718	719	784	776	803	806	811	815	817	863	902	908	910	914	953	957
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ELECTRICAL

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953 SILICONE PRODUCTS—Bulletin GCS-A—A reference guide to silicone products, which include fluids, compounds, greases, resins and varnishes. Lists properties and uses.—DOW CORNING CORPORATION.

957 ROTARY DUMPERS FOR MINES—AND RAILROAD CARS—Booklet 3045-A—Describes and illustrates rotary railroad car dumpers, capable of unloading open-type railroad cars at the rate of 1½ min to a full cycle of dumping and return.—LINK-BELT CO.

958 INDUSTRIAL INSULATION—Bulletin—Gives data and samples indicate the advantages of FC "foamglas" permanent industrial insulation, made up of millions of tiny glass bubbles that protect moisture and vapor travel.—PITTSBURGH-CORNING CORP.

984 DUST RECOVERY—Booklet, 32 pages—Outlines the theories and basic principles of centrifugal dust recovery, and the application of multi-dens units, with their advantages of adaptability, space saving, high efficiency and low maintenance.—WESTERN PRECIPITATION CORP.

Continued on page 114

Please send me without obligation, free booklets described in the November, 1951, issue of SOUTHERN POWER AND INDUSTRY as circled below:

6	8	13	15	24	37	40	42	48	54	56	68	69	84	91	109
122	160	161	178	207	210	224	229	236	281	283	265	267	268	269	282
303	326	352	356	357	403	414	416	430	432	463	465	466	469	469	491
501	506	509	520	527	539	562	583	591	602	621	634	690	692	706	717
718	719	754	776	803	806	811	815	837	863	902	908	910	914	963	967
968	984	810	811	812	813	814	815	816	817	819	819	820	821	822	823
824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839

Also send further information on following New Equipment (pages 92-100)

M1 M2 M3 M4 M5 M6 M7 M8 M9 M10 M11 M12 M13 M14 M15 M16
M17 M18 M19 M20

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Equipment and Review Editor
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Now!

Please be sure to fill in your Firm's Name and your position on the Coupon. This service cannot be extended to you unless this information is furnished.

First to Last— POWELL VALVES

Powell is first in designing valves to meet all the requirements of specific service conditions. That's why Powell Valves last longer.

It's also why there are more types of Powell valves in service today than of any other make!

The Wm. Powell Company
Cincinnati 22, Ohio

Fig. 3003 W. E.
Series 300-pound
Cast Steel O. S. & Y.
Gate Valve with
welding ends.

POWELL

BRONZE, IRON, STEEL AND CORROSION-RESISTING VALVES



**This 'dust' man is worth
his weight in gold—to you**

*He's the man behind the most
efficient, most economical method
of collecting nuisance dust.*

There are still many industrial men who have yet to sit across the desk from an industrial dust engineer—a man who may be actually worth his weight in gold to you.

If you are one of these men, you have a revealing half-hour in store—a half-hour that can show you the most efficient, low-cost way to eliminate the escape of objectionable nuisance dust...to raise employee morale...to boost plant-community relations.

The reason? Buell's staff of industrial 'dust' men draw on more than 200 man-years of experience in the design and construction of high-efficiency, trouble-free Dust Collection Systems. You will learn of the success of hundreds of Buell Installations. You will learn how one can be designed for you.

For full information about Buell Dust Collection and Dust Recovery Systems, write today. Ask for the new illustrated Buell 'Dust Collection' bulletin. It can be a highly profitable move. Buell Engineering Company, Dept. 80-K, 70 Pine Street, New York 5, N. Y.



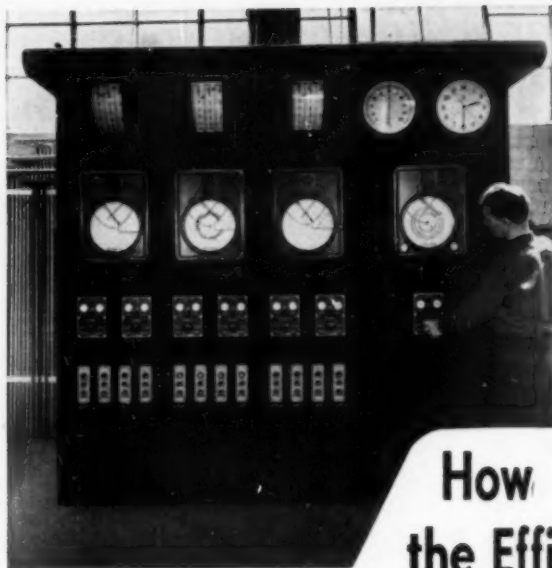
Buell van Tongeren Cyclones in series with Electric Precipitator provide high-efficiency collection of Fly Ash at a large Eastern Utility.



buell

ENGINEERED EFFICIENCY IN DUST COLLECTION

HIGH EFFICIENCY CYCLONES • ELECTRIC PRECIPITATORS
TYPE 'LH' COLLECTORS • LOW DRAFT LOSS COLLECTORS
SPECIAL PURPOSE COLLECTORS • DUST HOPPER VALVES



These Bailey Boiler Controls at the Chicago Pneumatic Tool Company's new plant in Utica, N. Y., insure efficient operation of three 25,000 lb per hour, 100 psi, spreader stoker-fired boilers.

How to INCREASE the Efficiency of YOUR BOILER-ROOM DOLLAR

Before you get steam you've got to spend dollars—so dollars are a form of energy.

And if your boiler-room dollars are invested in equipment that isn't working efficiently, economically, your "investment" is poor.

That's where co-ordinated controls by Bailey can help. Here's why they'll increase your "boiler-room investment efficiency":

1. **Complete Range of Equipment—fully co-ordinated.** You need never worry that a Bailey Engineer's recommendation is slanted in favor of a particular type of equipment, just because he has a limited line to sell—or that Bailey will pass the buck for efficient control; we offer *complete* boiler control systems.
2. **Engineering Service—backed by experience.** No other manufacturer of instruments and controls can offer as broad an experience, based on successful installations involving all types of combustion, flow measurement and automatic control.
3. **Direct Sales-Service — conveniently located near you.** Bailey Meter Company's sales-service engineers are located in more

industrial centers than those of any other manufacturer of boiler control systems; you get prompt, experienced service with a minimum of travel time and expense.



For better "boiler-room investment" efficiency—for more power per fuel dollar, less outage and safer working conditions, you owe it to yourself to investigate Bailey Controls. Ask a Bailey engineer to arrange a visit to a nearby Bailey installation. We're proud to stand on our record: "More power to you!"

A-111-0



BAILEY METER COMPANY

1028 IVANHOE ROAD
CLEVELAND 10, OHIO

Controls for Steam Plants

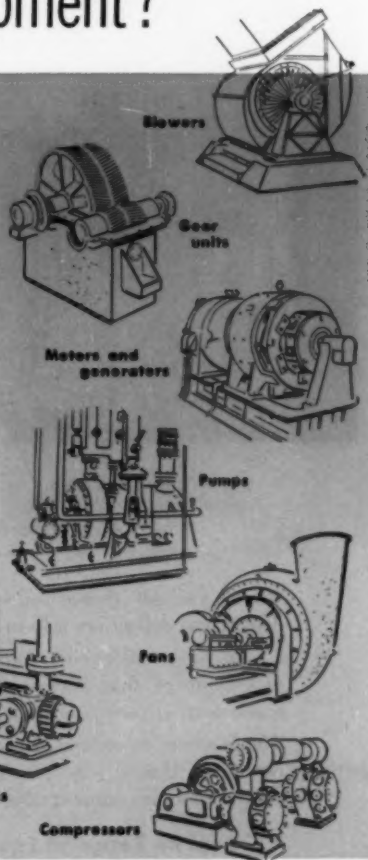
COMBUSTION • FEED WATER
TEMPERATURE • PRESSURE
LIQUID LEVEL • FEED PUMPS

WHY handle 3 or 4 lubricating oils for auxiliary plant equipment?

You need only one -

GULF HARMONY OIL

**BETTER PROTECTION
FOR EQUIPMENT
LIKE THIS!**



Gulf Harmony Oil is equally effective for sleeve-type bearings, oil-lubricated antifriction bearings, hydraulic mechanisms, compressor cylinders, and many types of gears. That's one important reason it's the ideal oil for auxiliary plant equipment.

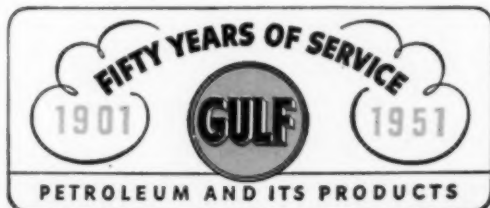
Then Gulf Harmony Oil has outstanding resistance to oxidation and the formation of sludge. In force-feed circulating systems, oil reservoirs, hydraulic systems, and antifriction bearings, Gulf Harmony Oil helps prevent harmful deposits, insures against premature oil changes.

Gulf Harmony Oil also provides a protective film which has preferential wetting characteristics for metal—it displaces moisture, interrupts its corrosive action. Thus Gulf Harmony Oil prevents rust on all oil-bathed surfaces—particularly important in precision hydraulic mechanisms and in antifriction bearings operating under damp conditions. And it separates readily from water, reducing the possibility of emulsification, and prolonging its useful life.

Its high lubricating value means more effective pro-

tection against wear under boundary conditions. Available in a wide range of viscosities.

Write today for complete information on Gulf Harmony Oil. Also ask for a copy of the booklet "Gulf Periodic Consultation Service," which tells about Gulf's advanced cooperative service for users of petroleum products. Gulf Oil Corporation • Gulf Refining Company, Gulf Building, Pittsburgh 30, Pennsylvania.



Specify these Edward Steel Valves... from the Line that Gives You the Better Designs



PROTECT EQUIPMENT
against abnormal
pressure increases with
Edward
RELIEF VALVES

Edward relief valves protect equipment against sudden and unusual pressure increases in piping systems. Foolproof design and accurate spring action make them absolutely dependable. One low cost valve can save much expensive equipment.

Used extensively in power, chemical, process, petroleum, hydraulic, marine, and general industrial service, they are particularly suited for relieving pressure in pump lines, drums, heat exchangers, and unlined pressure vessels handling water, steam, oil, or vapor.

They need no packing, maintenance is negligible, and the fine pitch threads of the adjusting screw allow close regulation of pressure setting.

NEW BULLETIN Write for new free bulletin No. 711 containing latest design details, dimensions, weights, and installation information.

Edward
PRESENTS

New ALL-PURPOSE STEEL VALVES



A new all-purpose valve series, ideal for almost any service where small O. S. & Y. steel valves are used.

Drop forged steel for greatest strength... simplest packing arrangement... tight, easily accessible union or bolted bonnet joints... bronze yoke bushings... microscopically mated seats and disks... lock welded parts. Built in sizes 1/4 to 2 in. inclusive, globe or angle, screwed or socket welding ends, carbon or chromium molybdenum steels, in 600 or 1500 lb pressure classes. Stocks now available.

Bolted bonnet 1-1/4 in. up 600 lb, 1 in. up 1500 lb. Union bonnet in smaller sizes.

For full details, dimensions, illustrations write today for your free copy of... **BULLETIN 501**

Quiet... Efficient

Edward
NON-SHOCK
Ball & Piston
CHECK
VALVES

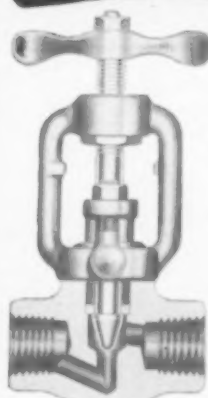


Vibration, clatter, and damaging shock to piping are cut to a minimum with Edward forged steel ball and piston check valves. Cushioned closing action eliminates excessive vibration. Accurate guiding and spring loaded construction assure fast positive seating.

EValloy stainless steel seat and ball or piston give maximum trouble-free service.

Union or bolted bonnet in sizes 1/4 in. to 2 in. inclusive in two pressure classes—600 lb at 850 F and 1500 lb at 850 F. For complete information, write for Catalog 104.

PRECISION REGULATION
Edward Instrument
Valves



New Edward Fig. 952 series instrument valves, so compact they fit limited spaces in such hook-ups as panel boards and manifolds, give precision regulation for meter, gage, regulator, by-pass and instrument lines of all types.

Forged steel, globe or angle. Rated 6000 lb WOG, 1500 lb 850 F in carbon steel. Also in stainless steels with higher ratings.

- No bonnet joint to leak.
- Swing bolted gland for easy packing.
- Needle point stem, fine pitch threads for accurate regulation.

WRITE FOR NEW BULLETIN Bulletin 491, with full details, is yours for the asking.

EDWARD BUILDS Globe and Angle Stop Valves • Integral Bonnet Univalves • Gate Valves • Non-Return Valves • Blow-Off Valves • Feed Line Stop-Check Valves • Intex (Integral Seat) Valves • Instrument Valves • Check Valves • Relief Valves • Hydraulic Valves • Gage Valves • Strainers • Special Designs

Edward Valves, Inc. 
SUBSIDIARY OF ROCKWELL MANUFACTURING CO.
122 WEST 144TH ST.
EAST CHICAGO, INDIANA

pennsylvania company solves **TOUGH** water hose problems

Splattering food juices in a large Pennsylvania Cannery quickly deteriorated ordinary washdown hose. The hose covers turned flabby and scraped off on concrete floors. The exposed carcasses wore out prematurely with the destruction accelerated when workmen kinked the hose to control flow. All this cost time and money.

Could the problems be solved?

Republic's local Distributor thought so, and suggested a test run with Republic's Fairway Water Hose... no custom-built hose necessary.

That test, begun 15 years ago, is still going on because the hose never wore out!!! The workmen are more efficient with the easy-handling Fairway Hose, and the company (now a confirmed Republic customer) is tickled to death since eliminating hose repair and replacement costs.

Fairway Hose, available in all standard sizes in 50 ft., 100 ft. or long production lengths on reels or in bales, is just one of the many Republic Rubber Products designed for rugged duty in your plant.

For a free analysis of your requirements, simply mail your request to Republic Rubber Division, Youngstown, Ohio.



INDUSTRIAL RUBBER PRODUCTS BY **REPUBLIC RUBBER DIVISION**

Lee Rubber & Tire Corporation
YOUNGSTOWN, OHIO

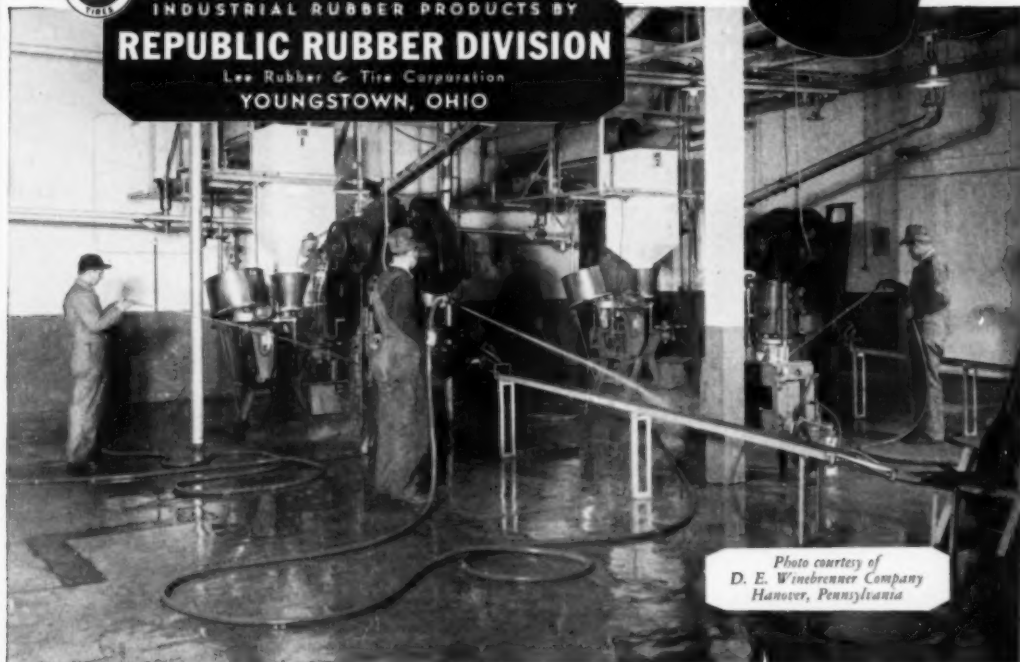
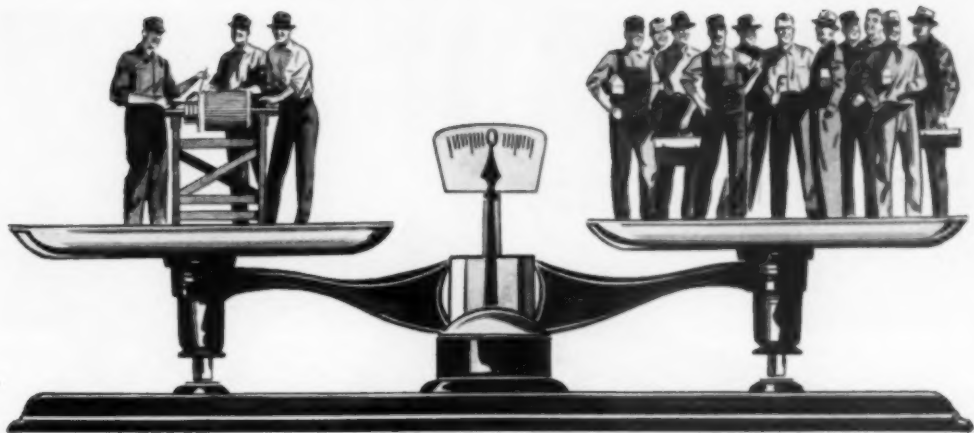


Photo courtesy of
D. E. Winebrenner Company
Hanover, Pennsylvania





\$370 INVESTED IN SILICONE INSULATION SAVES \$80,000 IN MAN-HOURS ALONE

TRAVELLING CRANE MOTORS insulated with Class B materials had a normal life expectancy of only 20 days in a large southern foundry. At least 2½ to 3 hours were required to change motors. Down-time cost \$1000 an hour in lost man-hours or \$2500 for each failure. That amounts to over \$40,000 a year in lost man-hours alone.

OVER TWO YEARS AGO, three crane motors, rated at 15, 30 and 50 hp, were rewound with Silicone (Class II) materials at an additional cost of about \$370.00. Still in service, those Class II motors have already saved \$80,000 in labor plus the cost of re-

winding with Class B materials plus the value of lost production.

THAT'S TYPICAL of the performance of motors protected with Class II insulation made with Dow Corning silicones. They last at least 10 times longer than the next best class of motors. They also have at least 10 times as much wet insulation resistance. That's why more and more military and industrial engineers are demanding Class II equipment. That's why more and more design engineers are specifying Class II equipment. And that's why Class II is becoming more readily available from motor manufacturers and rewind shops.

**WRITE,
RIGHT
AWAY**

to DOW CORNING CORPORATION, MIDLAND, MICHIGAN

Please send me ☐ List of Class II Motor Manufacturers 83-11A
☐ List of Class II Rewind Shops 83-11B

Name _____
Title or Dept. _____
Company _____
Address _____
City _____ Zone _____ State _____

FIRST IN
SILICONES

**DOW CORNING
CORPORATION**

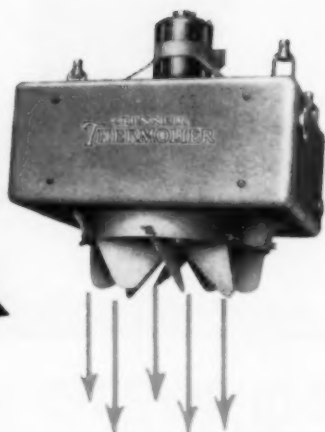
MIDLAND, MICHIGAN

ATLANTA • CHICAGO • CLEVELAND • DALLAS • LOS ANGELES • NEW YORK • WASHINGTON, D. C.
In CANADA: Fiberglas Canada, Ltd., Toronto • In GREAT BRITAIN: Midland Silicones, Ltd., London

DOWNRIGHT

better performance

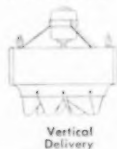
Vertical Delivery
THERMOLIER
Unit Heaters . . .



RIGHT DOWN

where maximum heat is desired...

4 MODELS 18 SIZES



Vertical
Delivery



Horizontal
Delivery



Textile
Model



Velocity
Nozzle

A thermostatic trap, the simplest and least expensive of all traps, is practical because of Thermolier's exclusive cooling leg.

Maximum capacity assured, annoying destructive water hammer eliminated — by built-in pitch of tubes and internal cooling leg which assure continuous drainage of condensate.

Damaging strains caused by expansion and contraction eliminated by "U" type expansion tubes.

Safety and durability assured with leak-proof tube-to-header construction.

Five other important construction features. Write for Thermolier Catalog.

in warehouses, plants and other
hard-to-heat buildings

HEATING COMFORT AND ECONOMY. Heat is forced down to the working level . . . not banked uselessly at the ceiling level. Thermoliers provide quick heating from a cold start. Desired room temperatures are easily maintained within a close range.

ADAPTABILITY TO EQUIPMENT AND FLOOR LAYOUT. The units and the simple piping are overhead where they do not interfere with arrangement of operating machinery or equipment and do not take up valuable floor or wall space. Units are easily re-located at any time to meet changes in plant layout or heating requirements.

LOW FIRST COST. Thermoliers are so efficient and so compact that their heating capacity is often equivalent to the capacity of cast iron radiation or pipe coils of twice the cost.

GRINNELL

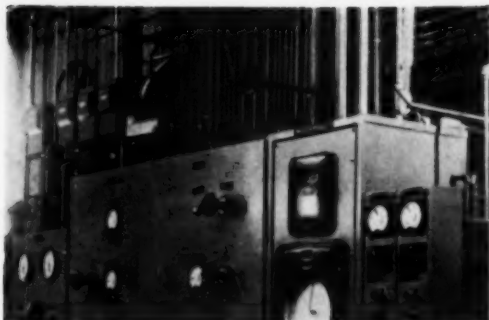
WHENEVER PIPING IS INVOLVED



Grinnell Company Inc., Providence 1, Rhode Island

Sales Offices and Warehouses in Principal Cities

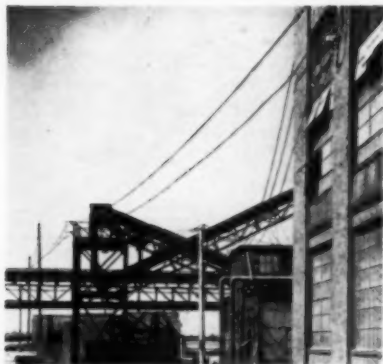
pipe and tube fittings • welding fittings • engineered pipe hangers and supports • Thermolier unit heaters • valves
Grinnell-Saunders diaphragm valves • pipe • prefabricated piping • plumbing and heating specialties • water works supplies
industrial supplies • Grinnell automatic • sprinkler fire protection systems • Amco humidification and cooling systems



▲ Maze of conduit carries Okolite-Okoprene control and power wiring from control panel to Kamy Pulp Drying Machine. A major portion of the equipment in the motor generator substation is also controlled from this switchboard.



▲ Motor generator room, showing 2300 entrance breakers, 550-volt distribution breakers, motor generator set and electronic speed regulator cubicles. All of these, both a-c and d-c, are fed by Okolite-Okoprene cable.



▲ Okolite-Okoprene self-supporting aerial cables distribute power to transformer sub-stations from the Power House. "Stormsafe" aerial cable eliminates congestion, reduces clearance problems, and provides triple economy of quick installation, low maintenance costs and better voltage regulation.



why it pays to use OKOLITE-OKOPRENE CABLES *throughout* THE JOB

The Story of an Okolite-Okoprene Installation at a Large Southern Pulp & Paper Mill

MORE and more electrical engineers are specifying OKOLITE-OKOPRENE cables for complete installations. For when every electrical circuit on a job is OKOLITE-OKOPRENE, the degree of circuit security on that job is unequalled.

OKOLITE-OKOPRENE is especially suitable for complete installations because of its versatility. Highly resistant to every element which attacks cable, OKOLITE-OKOPRENE is used in wet, dry, hot or cold locations—exposed to weather or sunlight—underground or in conduit.

For instance, a large pulp manufacturer made extensive use of OKOLITE-OKOPRENE in installing a Kamy Pulp Drying Machine. Power and control circuits, leads for the battery of synchronized generators and motors and circuit breakers, self-supporting aerial cable from sub-stations to the Power House—even push-button stations and the lighting system were OKOLITE-OKOPRENE.

The Company engineers selected OKOLITE-OKOPRENE throughout this job because of the necessity of keeping the Kamy Machine in continuous operation. Resistant to moisture, heat, sunlight, oils, acids, ozone and chemicals, OKOLITE-OKOPRENE is the most economical and reliable way of supplying electrical power to key operations. The Okonite Company, Passaic, N. J.



THE BEST CABLE IS YOUR BEST POLICY

OKONITE



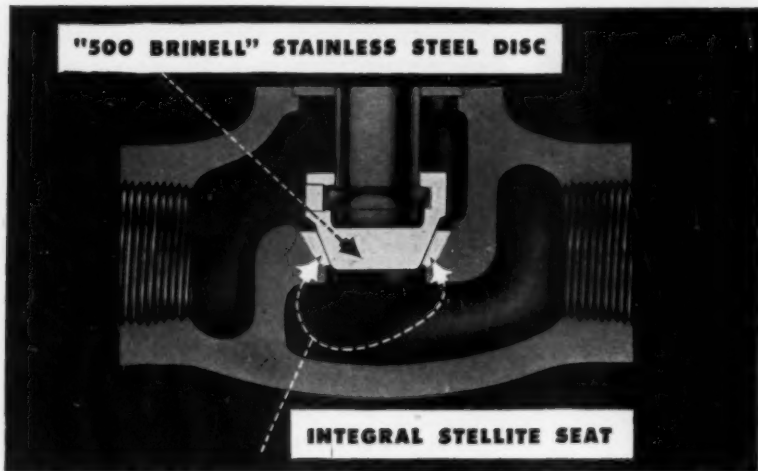
insulated wires and cables

IN THERE... DELIVERING ALL THE TIME!



600[#] Hancock Steel Weldvalves

END VALVE SEAT LEAKAGE AND REPLACEMENT!



Long, trouble-free service life—that's the record wherever Hancock Steel Weldvalves are installed. Integral stellite seat and "500 Brinell" stainless steel disc—accurately finished, perfectly aligned—provide permanent leak-proof tightness between body and seat. Seats never need be replaced. No wire drawing, galling, steam cutting, erosion, or corrosion.

CHECK THESE OTHER 600[#] HANCOCK WELDVALVE FEATURES:

Maximum Use of Welding adds strength, eliminates needless joints—the most common cause of leakage, gasket troubles and high maintenance costs.

Stainless Steel Ball Bearing Stem-to-Disc Connection for longer wear, even distribution of load, easy operation.

Corrosion-Resistant Back Sealing permits stuffing box shut-off around the stem with valve fully open.

Hancock Valves cost no more than ordinary valves, despite their outstanding design, operating advantages and unlimited service life. So, get the best for your money—specify Hancock Valves. *When Hancock's Go In, Valve Costs Go Down.*

Extra-Strong Upper Structure—far stronger than conventional designs.

Yoke Post and Gland Nut Threads Protected permanently—always workable.

Streamlined, Compact Design saves space, permits close alignment of piping with near structures.

Special Treatment resists corrosion of valve exterior.

GLOBE TYPE

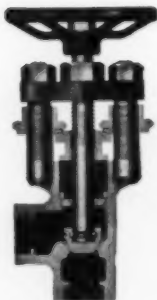


SIZES

1/4" through 2"—Screwed and Socket Weld Ends.

SERVICE RATINGS

W.S.P.	600#	850°F.
O.W.G.	2000#	100°F.



ANGLE TYPE

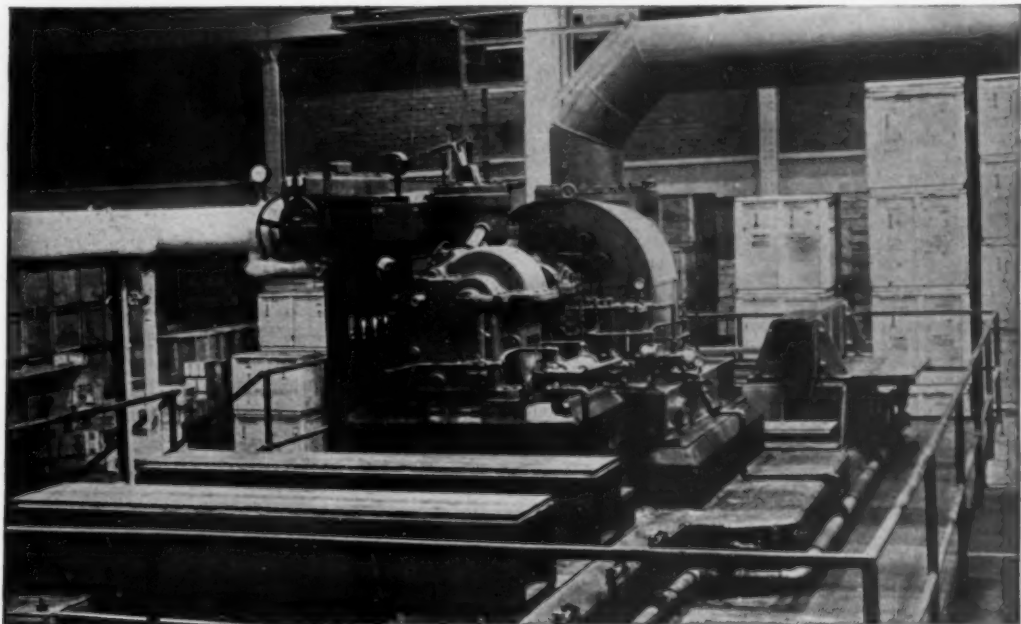
FOR PROMPT SERVICE, contact your near-by Hancock Valve Distributor.



HANCOCK VALVES

A product of **MANNING, MAXWELL & MOORE, INC.** WATERTOWN 72, MASSACHUSETTS
MAKERS OF 'HANCOCK' VALVES, 'ASHCROFT' GAUGES, 'CONSOLIDATED' SAFETY AND RELIEF VALVES, 'AMERICAN' INDUSTRIAL INSTRUMENTS, BUILDERS OF 'SHAW-BOX' CRANES, 'BUDGIT' AND 'LOAD LIFTER' HOISTS AND OTHER LIFTING SPECIALTIES.

The TERRY TURBINE



Flexible POWER and SPEED In This Test Unit

This new test stand for air- and gas-compressors at the Carrier Corporation plant in Syracuse, N. Y. meets a wide range of power requirements with a special-purpose Terry Turbine. Compressors tested may require the delivery of as much as 2500 hp at speeds as high as 14000 rpm, or the same power at 6000

rpm. This wide variation in speed was met by Terry engineers with a single 6000 rpm turbine having a double shaft extension. One extension is for direct connection to a compressor operating at not over 6000 rpm. The other extension delivers power through Terry speed-increasing gears at speeds up to

14000 rpm. The result is a compact unit that represents an economical solution to a special problem. It is typical of what Terry engineers do regularly.

Any of our district representatives will gladly give you full information on a turbine for your special purpose.

**THE TERRY STEAM
TURBINE COMPANY**
TERRY SQUARE, HARTFORD, CONN.

TT 1183



*There's an
Eagle-Picher Insulation
that can help you control
temperatures accurately...economically!*



Here's just one of the many efficient, economical Eagle-Picher Insulations. It's Eagle-Picher one-coat, all-purpose cement—a revolutionary new product that combines insulating and finishing materials ...that goes on in one easy-to-apply coat.

It gives your equipment highest possible thermal efficiency...cuts operating costs by saving fuel...and helps to provide perfect, precise control on temperatures.

Whatever your requirements...there's an Eagle-Picher Insulation that can fit your needs. Find out about them right away!

**THESE EAGLE-PICHER
PRODUCTS CAN SAVE YOU MONEY
... POWER ... TIME**

*Insulating Felts • Supertemp Blocks • Blankets
Loose Wool • Pipe Covering • Stalastic
Insulseal • Insulstic • Swetchek • Finishing
Cements • Insulating Cements • Fireproofing
Cement • Diatomaceous Earth Blocks*



**EAGLE-PICHER ONE-COAT,
ALL-PURPOSE CEMENT!**

A combination insulation and finishing material for temperatures to 1000 F. It's quick setting, rust-inhibitive...has light color, smooth surface, negligible shrinkage. It has exceptional adhesive qualities on ferrous metals and insulation materials. And it's unaffected by rain or moisture after it sets!



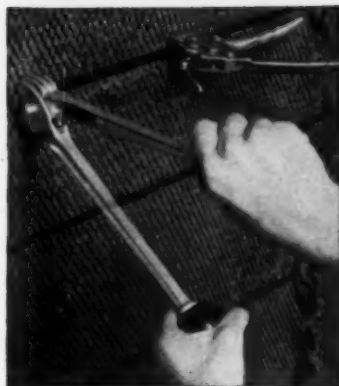
THE EAGLE-PICHER COMPANY • General Offices: Cincinnati (1), Ohio
Insulation products of efficient mineral wool—for a full range of high and low temperatures.
Technical data on request.
Since 1843.

3173 M



These efficient, versatile insulations "team up" to give perfect insulation for every major application

For a completely effective, low-cost insulation combination, you can't beat the teamwork of Eagle-Picher Mineral Wool Blankets, Supertemp Blocks, Diatomaceous Earth Blocks and Earth Fill, and Super "66" Cement. They work effectively to give your equipment highest possible thermal efficiency . . . cut operating costs by saving the maximum amount of fuel . . . and help to provide perfect, precise control over temperatures.



EAGLE-PICHER MINERAL WOOL BLANKETS

These blankets satisfy the need for a convenient method of quickly and efficiently insulating flat or curved surfaces on larger types of heated equipment. Mineral wool is felted and secured between flexible metal fabric. Outstanding physical and chemical stability enables Eagle-Picher Blankets to resist water, steam, corrosive fumes and normal vibration.



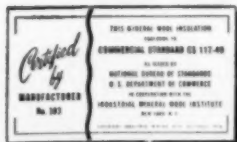
EAGLE-PICHER SUPERTEMP BLOCKS

Eagle-Picher Supertemp Blocks are lightweight (approximately 16 lbs. per cu. ft.). Can be cut easily with knife or saw to fit off-shaped areas . . . they fit snugly over minor irregularities. They're strong and have high refractory value. Withstand temperatures up to 1700 F. Conductivity at 512 F. approximately 0.53 . . . all standard sizes, from 2" x 18" to 12" x 36" in thicknesses from 1" to 4".



EAGLE-PICHER SUPER "66" INSULATING CEMENT

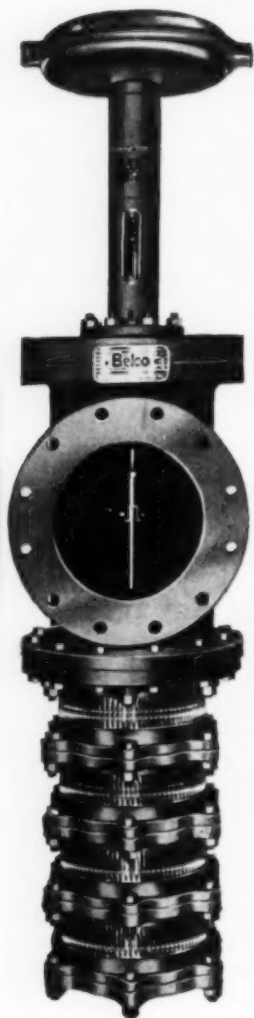
Super "66" is all-purpose, rust-inhibitive, extremely adhesive insulating cement. "Springy ball" pellets don't collapse after application . . . give great coverage, retain their thermal efficiency. 100 lbs. covers approximately 55 sq. ft. — 1 inch thick. Easily applied with trowel, over flat and irregular surfaces. Efficient for temperatures up to 1800 F. Reclaimable when used on equipment whose temperatures do not exceed 1200 F.



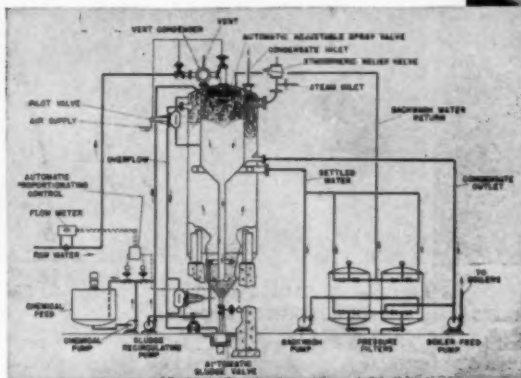
Eagle-Picher, as a member of the Industrial Mineral Wool Institute, urges that you look for this label. It is a certification by the manufacturer that his mineral wool product conforms to Commercial Standard CS 117-49 as issued by National Bureau of Standards, U.S. Department of Commerce in cooperation with the Industrial Mineral Wool Institute, New York, N.Y.



The exclusive Belco Automatic Atomizing Valve Performs a Superior job in HOT PROCESS SOFTENERS



Yes, the Belco Valve, by dividing influent water into finely atomized droplets insures practically instantaneous heating on contact with the steam atmosphere. Thus elimination of 95% of the dissolved oxygen and all free carbon dioxide is accomplished. Excellent results have been attained with the Belco valve and numerous installations stand as proof of its maximum efficiency. We would like to tell you more. The types of jobs we design and build—the customers we design and build for. Call us next time you consider equipment for the removal of water impurities. We're sure we can help you to your advantage.



You may be interested in Bulletin 103, it describes Belco Heaters, Deaerators & Hot Process Softeners.

Belco

Processes for Removal of Water Impurities

BELCO INDUSTRIAL EQUIPMENT DIVISION, INC.

PATERSON 3, NEW JERSEY

HEADQUARTERS FOR AUTOMATIC CONTROL OF ALL WATER CONDITIONING PROCESSES • AUTOMATIC CHEMICAL PROCESS CONTROLS • WATER SOFTENERS: Hot Lime Soda, Belcolite, Gravity and Pressure Types, Automatic and Manual • FILTRATION EQUIPMENT: Gravity and Pressure Filters, Automatic and Manual Filters, Siliceous and Non-Siliceous Filters, Iron, Oil, Taste, Odor and Color Removal Filters • SWIMMING POOL PURIFICATION EQUIPMENT: Automatic and Manual • DIATOMACEOUS EARTH FILTERS • COAGULATION EQUIPMENT: Slow and Rapid Mix Agitators (Adjustable variable speed) Settling Tanks, Sludge Removers • SPECIAL EQUIPMENT: Deionized (Equivalent to Distilled) Water Equipment, Silica Removal Equipment, Boiler Feed Water Heaters, Deaerators, Degassifiers, Chemical Dry Feeders, Chemical Pressure Feeders, Oil Separators (Refining process type)

IN CANADA: BOGUE ELECTRIC OF CANADA, LTD., 1405 BISHOP STREET, MONTREAL, QUEBEC



IT'S
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SATISFACTION
WHEN IT'S
PACKED
WITH R/M

You will find Raybestos-Manhattan packings and gaskets in machines like this reciprocating boiler-feed pump, and in practically every other type of fluid-handling equipment in industry. The long line of R/M packings and gaskets is relied on by experienced engineers, not only for pumps, but for valves, compressors, expansion joints, hydraulic rams, and wherever trouble-free service is essential. The R/M distributor near you will gladly help you select the right packing or gasket for your needs. Or write for the R/M Packing Catalog.



PACKINGS

RAYBESTOS-MANHATTAN, INC.
PACKING DIVISION, MANHEIM, PA.

FACTORIES: Bridgeport, Conn. Manheim, Pa.
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RAYBESTOS-MANHATTAN, INC., Manufacturers of Packings • Asbestos Textiles • Mechanical Rubber Products
Abrasive and Diamond Wheels • Rubber Covered Equipment • Brake Linings • Brake Blocks • Clutch Facings
Fan Belts • Radiator Hoses • Powdered Metal Products • Bowling Balls

LOW PRESSURE?

Thousands of low pressure boiler plants rely on Yarway Sealless

Blow-Off Valves to keep blow-down lines tight.

Famous balanced sliding plunger design eliminates a common source of blow-off valve leakage. There is no seal to seize, wear, clog and leak.

Yarway Sealless Blow-Off Valves are furnished in tandem, as shown, or singly—angle or straightway.

For complete specifications of Yarway Blow-Off

Valves for pressures to 400 psi,

write for Bulletin B-424.



HIGH PRESSURE?

If your boilers are in the high pressure range, Yarway Unit Tandems may be the answer to your blow-off valve problem. These are rugged, dependable valves. Combined in a one-piece forged-steel body is a Yarway Stallite-seat valve (for blowing) and a Yarway Sealless valve (for sealing). For highest pressures, two Yarway Stallite-seat valves are combined.

It's noteworthy—4 out of every 5 high pressure boiler plants use Yarway Blow-Off Valves. For complete specifications of Yarway Unit Tandems for pressures from 800 to 1500 psi, write for Bulletin B-433.



YARNALL-WARING COMPANY

Home Office: 116 Mermaid Ave., Phila. 18, Pa.

Southern Representative: ROGER A. MARTIN, Sans Allen Building, Atlanta 3, Ga.

YARWAY

BLOW-OFF VALVES

BLOW-DOWN TROUBLES—KEEP BOILERS ON THE

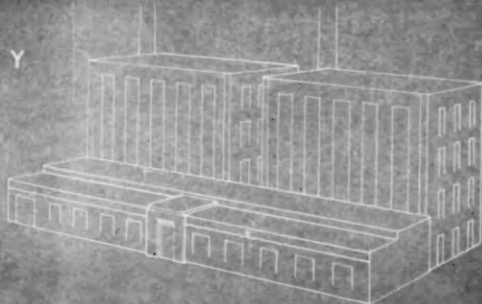
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Now Over 3,000 Power Plants

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... INDUSTRIAL
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Have Installed

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Johnstown, Pa.

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CARBIDE & CARBON CHEMICALS CORP.
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Peoria, Ill.

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VALLEY CITY LIGHT AND POWER CO.
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When it comes to mechanical draft, Clarage **HEAVY-DUTY** equipment has a nationwide reputation for dependable service. Hundreds of Clarage fans—both forced and induced draft fans—have been in continuous operation ten, twenty, thirty years without performance failure or the need for major repairs. There is no better designed, better built fan equipment available to meet power plant requirements.

CLARAGE FAN COMPANY
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Sales Engineering Offices

CLARAGE

—HEADQUARTERS for Air Handling
and Conditioning Equipment



in All Principal Cities



Small plants, too, slash coal handling costs

LINK-BELT engineering and equipment provide "big-plant" efficiency

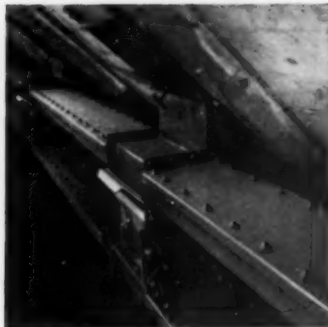
Whether you handle one ton or 2000 tons of coal per hour, Link-Belt builds equipment to match your requirements. As in the power plant shown here, Link-Belt offers you all the latest advances in coal handling equipment.

Our engineers will work with you and your engineers from design stage to finished structure, selecting the proper equipment for your plant. Result: lower cost per ton handled.

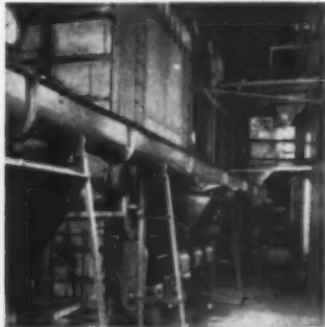
Link-Belt coal handling equipment at this plant delivers coal from railroad car to storage to boiler. L-B Bucket Elevator discharges to silo and also handles coal to and from reserve ground storage.



Bar Flight Feeder handles coal from track hopper to bucket elevator at capacity rate of 50 tons per hour. Link-Belt Gearmotor and Roller Chain comprise the drive.



Bulk-Flo, a combined feeder-conveyor-elevator, reclaims coal at 10 TPH from live storage to surge hopper. Only the horizontal section of L-shaped path is shown.



Coal flows from Bulk-Flo to surge hopper, then through automatic weigh scale to a Link-Belt Screw Conveyor, which distributes to three stoker hoppers.

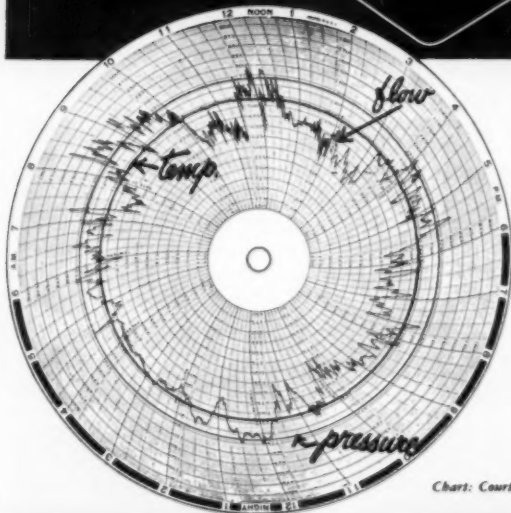
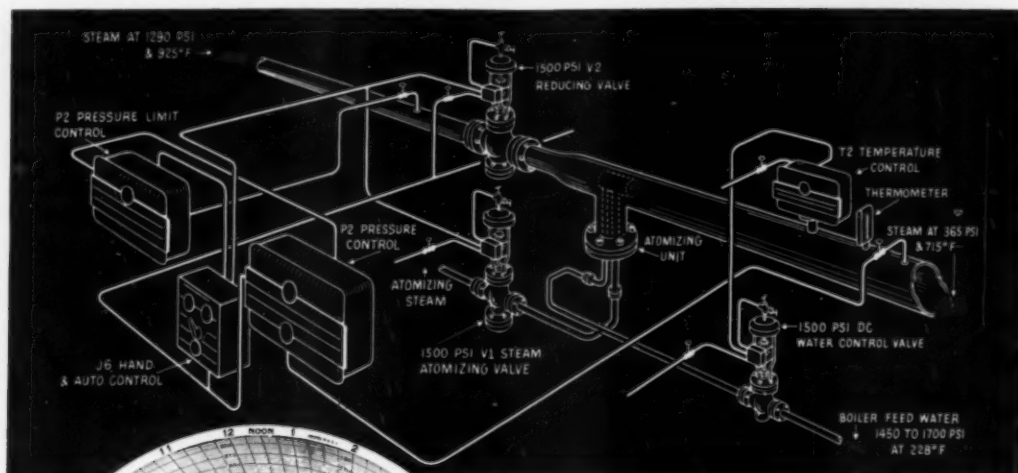
**COAL HANDLING
EQUIPMENT**

LINK-BELT

LINK-BELT COMPANY: Atlanta, Dallas 1, New Orleans 12, St. Louis 1, Charlotte 2, N. C., Baltimore 18, Birmingham 3, Houston 1, Jacksonville 2.

12,807

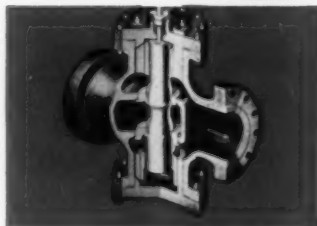
Swartwout RDC* controls within ± 1 psi and $\pm 3^\circ\text{F}$ even with widely fluctuating load swings



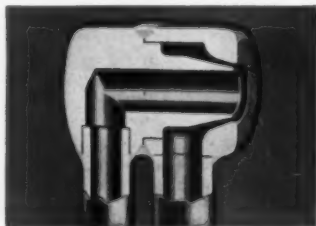
1 Chart shows how Swartwout RDC*—Reducing, Desuperheating and Control System—handles low-pressure turbine load of 65,000 to 165,000 lbs. steam per hour in Des Moines Power Station No. 2 of the Iowa Power and Light Company. It reduces from 1290 to 365 psi and desuperheats from 925° to 715°F. When main reducing valve closes, extremely light loads can be handled by pressure reducing valve supplying atomizing steam. Operation of the system is stable regardless of load change or time lag. Because of the exceptional control obtained by this large station, the Iowa Power and Light Company later purchased an additional small Swartwout RDC unit to supply steam to house turbines.

Swartwout POWER PLANT EQUIPMENT

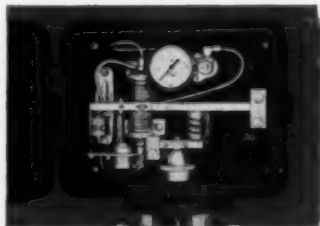
Chart: Courtesy Iowa Power and Light Company



2 Swartwout V-2 Regulating Valve has smooth, nozzle-shaped passages which guide expansion of high-pressure steam to reduced pressure zone without high-velocity impingement or other destructive forces common to conventional valves. Undue noise, turbulence and vibration are eliminated; longer valve life results.



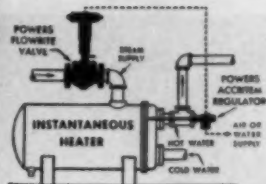
3 Swartwout Steam Atomizing Desuperheater, constructed of stainless steel, has accurately machined passages that give narrow-angle dispersion of cooling water outside of steam atomizing head. There is no impingement of steam or water against walls of unit, no erosion of parts, no need for pipe liners.



4 Swartwout T-2 Control, with metallic temperature element in steam pipe, gives rapid and precise control regardless of magnitude of load or time lag. There are no flapper valves, relays or other delicate elements. Only two simple adjustments are involved; one for temperature, one for response.

A-3085

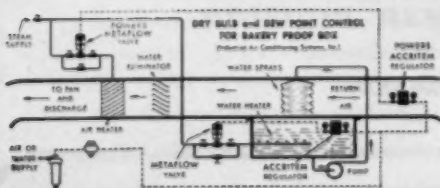
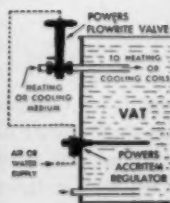
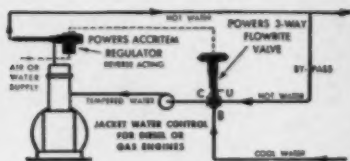
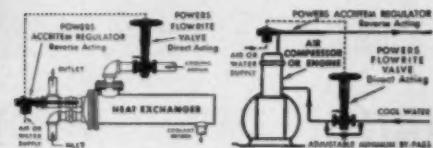
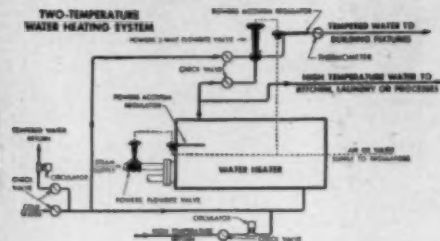
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POWERS

ACCRITEM REGULATOR

Only a few of many uses



Gives Accurate, Low Cost Heat Control

Use Accritem Regulators to control diaphragm operated valves or dampers. They save labor, stop losses caused by over-heating and have the following—

IMPORTANT ADVANTAGES

- **Adjustable Sensitivity** and over-heat protection.
- **Calibrated Dial** temperature adjustment.
- **Simple, Rugged Construction** withstands vibration and insures many years of reliable service.
- **Temperature Ranges** 50 to 250° F. and 150 to 350° F.
- **Easy to Install** Requires 15 lb. supply of compressed air or water for its operation.
- **Small Size**—regulator head is only 2 7/8" x 3 3/4", sensitive bulb is 12" long with 1/2" I.P.S. connection.



FLOWRITE and METAFLOW
Diaphragm Valves
controlled by a **POWERS**
ACCRITEM HEAT REGULATOR
provide an unbeatable
combination for better control
and lower maintenance

Write for Bulletin 316—or phone our nearest office for prices and further information about **POWERS ACCRITEM** regulators and diaphragm valves.

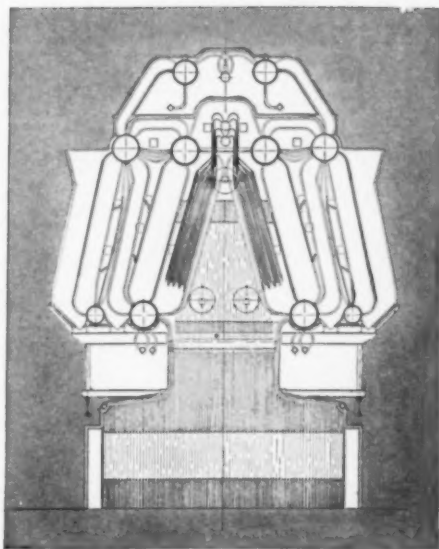
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(AMG)

60 Years of Temperature and Humidity Control

**"... a remarkable
job of keeping
the boilers clean"**

Nominal rating: 850,000 pounds per hour at 400 psi and 750° F. Each Ladd-type C-F boiler has six fully-automatic Vulcan long retractables installed in very congested space where temperatures are severe. The boilers are kept clean at all times. No hand lancing is needed.



HERE'S WHAT THE PRODUCTION DEPARTMENT **REPORTED** . . .

"The first year of operation of the Vulcan retractable soot blowers at Station has been a decided success. A total of eighteen blowers (six per boiler) have been in daily service without the loss of a single lance . . .

"... the soot blowers have done a remarkable job of keeping the boilers clean. Each . . . has been kept clean and in condition to exceed a million pounds of steam per hour rating at any time."



These three boilers had been in service almost twenty years. The original soot blowers—even when supplemented by daily hand lancing—had been unable to clean adequately the boiler and superheater tubes.

Narrow aisles and interferences from building steel and other equipment created a difficult installation problem, but Vulcan solved it. Just as Vulcan can solve your trickiest problem keeping boilers clean.

VULCAN SOOT BLOWER DIVISION

Continental Foundry & Machine Company

DUBOIS, PENNSYLVANIA

VULCAN  **Automatic
Soot BLOWERS**



FOR METERING
Flow - Level - Pressure
WHERE
ACCURACY
FLEXIBILITY
RUGGEDNESS
ARE IMPORTANT CONSIDERATIONS

One of a group of Republic transmitters metering flow and level in a modern chemical processing plant.

Republic Pneumatic Transmitters are available for measuring flow, liquid level, pressure or liquid density of a wide range of fluids. They employ the force-balance principle to convert these process variables into air pressures which vary proportionally. These air pressures become direct measurements and can be conducted to reading instruments or used as the measuring impulse for the actuation of an automatic controller.

Republic transmitters have a guaranteed accuracy of within $1/2$ of 1% of the transmitter range. By making a few minor adjustments or substituting a few small parts, their operation can be easily changed to any desired range between a minimum of 0-0.6" to a maximum of 0-704" of water. Their construction is more like that of a precision machine than of the sensitive instrument they are. Data Book No. 1001 contains complete details—write for your copy.

REPUBLIC FLOW METERS CO.

2240 Diversey Parkway, Chicago 47, Illinois

**"NO OTHER OIL
has done this Job!"**

reports

Willys-Overland Forge



Mr. Wm. Paris, Vice President in Charge of Manufacturing at Willys-Overland Motors, Inc. says, "We have saved plenty of cylinders, packing, and down-time since shifting to Sinclair lubrication."

Rising production forced the mammoth Forge Shop at Willys-Overland to set up ram speed 30%. As the power was insufficient, the steam had to be raised to 400° F. by superheating. Then the lubrication problem started!

The hotter steam and faster ram speed quickly burned up packings, and cylinders became scored. Many lubricants were tried. All failed to halt the destruction . . . until the Forge tried Sinclair Valve Oil Light. Now it reports it hardly ever has a scored cylinder and no more lubrication headaches. The Forge does not believe it possible to get finer steam cylinder lubrication and emphatically concludes that, "No other oil has done this job!"

If you have a steam cylinder lubrication problem it can pay you to consult with Sinclair, for Sinclair makes a wide variety of Steam Cylinder Oils to handle every possible need. Get in touch with your nearest Sinclair Representative or write Sinclair Refining Company, 600 Fifth Ave., New York 20, N. Y.



The Forge Shop at Willys-Overland, Toledo, where only Sinclair Steam Cylinder Oil has done the job.

SINCLAIR STEAM CYLINDER OILS
for every steam cylinder installation

● **DETROIT STOKERS**
In Plants of Peter Cooper Corporations

Eastern Tanners Glue Division

Gowanda, N. Y.

1939—Five Detroit RotoStokers

1943—Two Detroit RotoStokers

Canada Glue Company, Ltd.
Brantford, Ontario

1939—Three Detroit RotoStokers

1946—One Detroit RotoStoker

Diamond Glue Division

Chicago, Illinois

1944—Two Detroit RotoStokers

1945—Two Detroit RotoStokers

United States Glue Division

Carrollville, Wisconsin

1946—Two Detroit RotoGrate Stokers

1947—Two Detroit RotoGrate Stokers

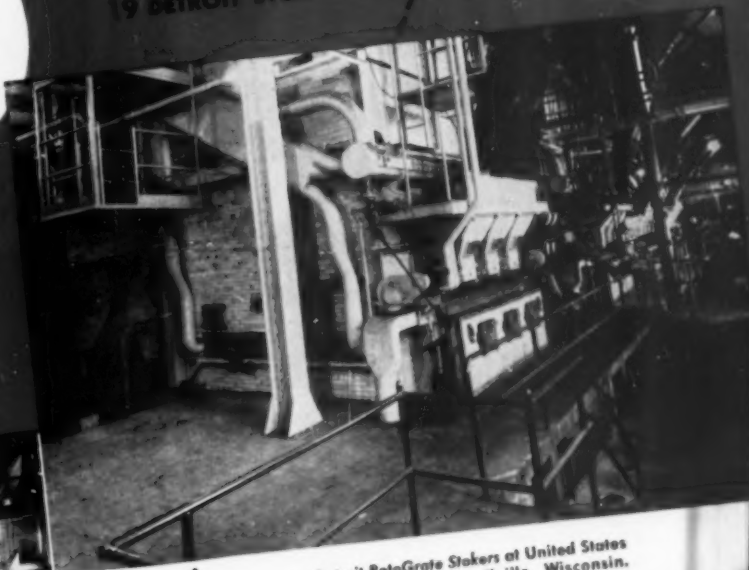
Peter Cooper Corporations—one of the oldest firms in America has bought Detroit Stokers in quantity since 1939.

Detroit Stokers have been highly satisfactory in meeting the demands for large outputs of process steam with fluctuating loads. Their economy, ability to handle a wide range of bituminous coal without special preparation resulted in these repeat orders.

Detroit Stokers can provide economy in your plant. Write for information.

Peter Cooper* Corporations served by **DETROIT STOKERS**

19 DETROIT STOKERS IN FOUR PLANTS SINCE 1939



● Detroit RotoGrate Stokers at United States Glue Division, Carrollville, Wisconsin.



Peter Cooper (1791-1883) was one of the great pioneers of American Industry. Entering the glue and isinglass business early in the 19th Century, he ranged into many fields of endeavor. He built "Tom Thumb", the first locomotive built in America—was early in the iron and steel business—made the first rolled structural beams—was the first in U. S. to use the Bessemer steel making process. He also furnished much of the cash for laying the first Atlantic cable. Cooper is most famous for the Cooper Union, New York City, which he founded in 1859. Here, in 1860, Abraham Lincoln made the famous speech which opened his way to the presidency.

DETROIT
SINCE 1898
STOKERS

THERE IS A TYPE AND SIZE OF DETROIT STOKER FOR EVERY INDUSTRIAL OR POWER NEED

**DETROIT STOKER
COMPANY**

GENERAL MOTORS BUILDING, DETROIT 2, MICHIGAN

District Offices in Principal Cities — Wabash at Monroe, Michigan



● Above: Five of seven RotoStokers at Eastern Tanners Glue Division, Gowanda, New York.

● Below: Two of four RotoStokers at the Canada Glue Company, Ltd., plant, Brantford, Ontario.



NOBODY GUESSES WHEN YOU USE . . .

WALSEAL*

**FOR MAKING
SILBRAZ* JOINTS**



When you see this fillet of alloy, and the fitting is Walseal you know that you have penetration because the alloy comes from the inside.



Cutaway view of a Walseal Tee showing: 1—factory-inserted ring of silver brazing alloy; 2—fillet of silver brazing alloy that appears upon completion of Silbraz joint; 3—cutaway view of the completed Silbraz joint showing that silver brazing alloy has flowed in both directions from the factory inserted ring.

When you make Silbraz* joints in your brass, copper, or copper-nickel pipe lines with Walseal Valves, Fittings, or Flanges you know you have the right amount of the correct type of silver brazing alloy. The ring of Sil-Fos brazing alloy is factory-inserted in the ports of Walseal products at the time of manufacture.

No lost time or motion in handling the alloy . . . no difficulty in getting full penetration of the alloy regardless of the position of the valve or fitting . . . no guessing whether the joint is made right . . . the fillet of alloy that shows up when the Silbraz joint is completed, comes from the inside!! And, whether you've made the Silbraz joint yourself, or inspecting the work of another, you know that if the silver alloy fillet is visible, and the valve or fitting is Walseal, you have full penetration. That's why nobody guesses when you use Walseal!

Walseal products are backed by the reputation of the Walworth Company, manufacturers of valves and pipe fittings since 1842.

For full information regarding Silbraz joints made with Walseal products, write for Circular 84.

* Patented—Reg. U. S. Pat. Off.

Make it "a one-piece pipe line" with WALSEAL

WALWORTH
valves and fittings

60 EAST 42nd STREET, NEW YORK 17, N. Y.

Recommended for

**Hot and Cold Water
Circulating Systems**

Boiler Feed Lines

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Condensate Lines

**Low and High Pressure
Air Systems**

**Lubricating Oil Circulat-
ing Systems**

Industrial Gas Piping

**Solvent and Vacuum
Piping Systems**

DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD

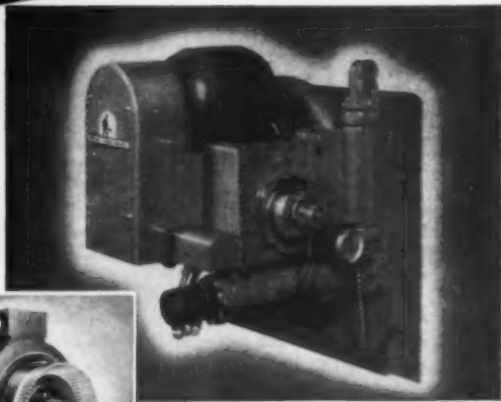
from **GAS** to **OIL**

in a matter of minutes

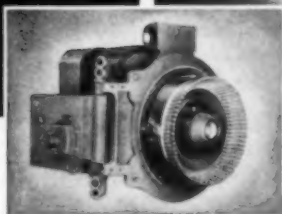
and vice-versa



Above, the Iron Fireman Ring Type gas burner takes over the firing job, with the Iron Fireman Horizontal Rotary oil burner swung back from firing position on boiler front. Right, firing end of Iron Fireman combination gas-oil burner.



Above, Iron Fireman Horizontal Rotary oil burner in firing position. Removal of center plate in gas burner permits insertion of oil burner nozzle in center of gas ring. For long periods of oil firing, gas ring is customarily removed.



Meet fuel emergencies with IRON FIREMAN combination firing

Only a few minutes notice is required to switch from one fuel to another. The Iron Fireman gas-oil burner guards your buildings or plant against sudden fuel emergencies, or against daily or seasonal gas shortages due to peak demands. You may also take advantage of changing fuel prices or seasonal rates.

The Iron Fireman Ring Type gas burner operates equally well with natural, manufactured or mixed gas, or with forced or natural draft.

The Iron Fireman Horizontal Rotary oil burner fires any grade of oil without special adjustment, from lightest to heaviest (No. 6). The exclusive Iron

Fireman Oil Volumeter maintains extremely accurate oil flow regardless of changes in oil viscosity. Heat-rich, low-cost industrial oils can be fired as easily as the refined domestic oils.

Every installation is engineered for most efficient application to your individual requirements. Sales and engineering service throughout U. S. and Canada.

Write for 16-page illustrated booklet and specification sheets, to Iron Fireman Mfg. Co., 3140 W. 106th St., Cleveland 11, Ohio. Other plants in Portland, Oregon; Toronto, Canada. Dealers everywhere.

IRON FIREMAN

OIL, GAS and COAL FIRING FOR POWER, PROCESSING OR HEATING

An Immutable Law of Nature

Assures

CORRECT WATER LEVEL READING

DIAMOND

BI-COLOR WATER GAUGE

An unvarying law of nature . . . the difference in refraction between water and steam . . . assures correct water level indication in the Diamond Bi-Color Water Gauge.

Red and green light are directed through the gauge glass. The water refracts the red light out of sight . . . so water always shows green. Steam refracts the green light out of sight . . . so steam always shows red. The junction of the red and green is always the exact water level. The contrast is unmistakable...and there is no guessing whether the glass is full or empty. There are no moving parts or linkages . . . and no time lag.

The Bi-Color image is so clear that it can be mirrored from any reasonable height* and through three grating levels to the firing floor without confusion. It can be easily substituted for most existing water gauges, whether of Diamond or other manufacture. Ask for Bulletin 1015.



*Where distance is greater than approximately 100 ft and multiple mirrors are required, or where the cost of keeping the light path clear of obstructions is a factor, the addition of a Diamond "Utiliscope" is recommended. See Bulletin 1025.

DIAMOND POWER SPECIALTY CORP.

LANCASTER, OHIO

Diamond Specialty Limited

Windsor, Ontario

Write for

Bulletin No. 1015

4466-B

Timely Comments



Developing Outside Production Sources

TWO LARGE SOUTHERN MANUFACTURERS report excellent response from the two Armed Forces Small Business Exhibits held in Fort Worth, Texas and Atlanta, Georgia. Exhibits were designed to interest small manufacturers and businesses throughout the South and Southwest in taking sub-contracts on vital defense contracts.

The *Lockheed Aircraft Corporation*, Georgia Division, at Marietta, Georgia, reports that approximately 50 per cent of the B-47 will be built by sub-contracts. Within a month after the Fort Worth clinic, the *Texas Engineering and Manufacturing Company* of Dallas, Texas, had awarded contracts to 11 manufacturers and another 50-60 were scheduled to receive them in the immediate future.

Airplane Parts From Everywhere

In the *SOUTHERN STAR*, official publication of the Lockheed Aircraft Corporation, sub-contracting officials report that just about every type manufacturer can play a part in building the B-47 Stratojet. For instance, Brunswick - Balke - Callender, Marion, Virginia, well-known for its billiard tables and balls and bowling equipment, is now building the radome for the Stratojet. The Crosley Appliance Division of AVCO at Nashville, Tenn., is building the tail section of the 600-mile-an-hour bomber. And Liquid Carbonic Co., maker of bottling machinery, is now building drop tank struts for the B-47.

American Stove Company, builder of Magic Chef gas ranges, is now pounding out the drop tanks. Coleman Manufacturing Co., maker of home heating units, is constructing the assist-take-off racks and panels for the new bomber.

Perry Walter, purchasing agent on seven controlled sub-contract items at Lockheed's Georgia Division, said these companies are typical of other sub-contractors converting part or all of their operations to help with the B-47. He also reported that the company received tremendous response at both the Fort Worth and Atlanta small business exhibits and that they obtained a lot of information on the potentialities of Southern manufacturers.

Efficient Classification at Temco

According to *C. D. Collier*, director of Material, for the Texas Engineering and Manufacturing Company, Temco went into the clinics with one purpose—to develop as many qualified sources for outside produc-

tion as it possibly could. The company developed an exhibit designed to show not what Temco itself could do, but rather the types of work it might want other companies to perform for it.

All registrants at the clinic in Fort Worth were carefully cataloged so whenever a job came up for outside procurement, the buyer would have at his finger tips a list of sources who had stated they were interested in doing that type of work.

The catalog had eleven major classifications: castings, crates and boxes, forgings, machine shop work, plastics, processing, sheet metal fabrication, tools and tooling, welding, woodwork, and miscellaneous. The latter was in turn broken down into 44 sub-categories ranging from aircraft and engine overhaul to wind-shields.

The classification and cataloging of the Clinic registrants has provided valuable information to Temco buyers on just who these small business men who are looking for defense work are, and on the type of work they desire to do.

Help Stretch The Freight Car Supply

RECOMMENDED MEASURES for meeting an expected stringent freight car shortage, have been outlined by the Chamber of Commerce of the United States. The proposed steps are presented in an illustrated pamphlet issued by its transportation and communication department under the title "Stretching the Freight Car Supply." It tells both shippers and carriers what must be done to make more cars available through efficiency in handling them, since new cars cannot be built fast enough to meet the need for car space.

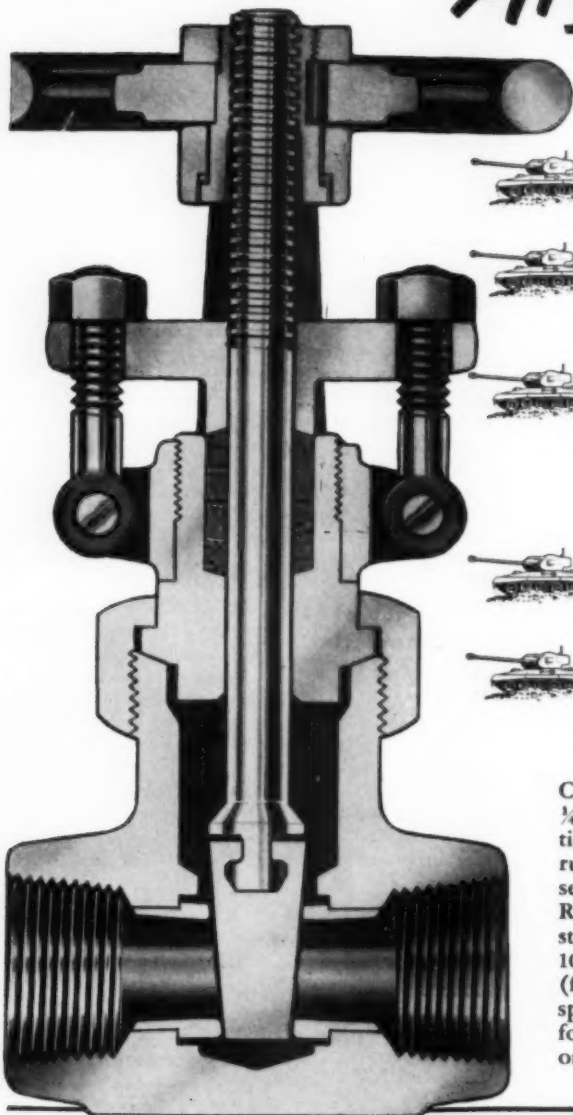
Here's what the shippers can do.

- Load cars fully.
- Load, bill and unload promptly.
- Use no cars for storage.
- Clean cars before releasing.
- Try to load cars in direction of owners' lines.

Here's what the carriers can do.

- Spot and pull cars promptly.
- Speed up terminal and line-haul operations.
- Distribute car supply efficiently.
- Avoid accumulation of cars.
- Repair bad-order cars promptly.
- Give maximum six-day service.

All 5 Vital Points are **ARMORED**



Body and Yoke are of Forged Steel,
for extra strength and longer life.



Bolted Follower

with no follower threads on yoke to corrode. Follower easily tightened down any time when necessary.



Malcomized Gate Faces:

When furnished with either 12-14% or 18-8% stainless steel trim, List 960's gates are hardened by "Malcomizing," patented Chapman process. "Malcomizing" hardens to a minimum of 800 Brinnell, which minimizes seizing or galling and lengthens valve life.



Super-Hardened Seat Rings

and wedge-faces of stainless steel help to save on repairs and replacements.



Strong Stem and Wedge Connection

Extra strength of stem-and-wedge gate connection provides protection against even unusual service stress.



Chapman List 960 is available in sizes from $\frac{1}{4}$ " to 2" . . . in four different alloy-combinations of body and trim which qualify this rugged forged gate valve for many different services. Gasketed joint, or metal-to-metal. Rising stem with yoke (shown) or rising stem inside screw. Pressure range: 2000 lb. at 100°F.—380 lb. at 1000°F. (for higher pressures, specify List 990). Write for illustrated fact-sheet on List 960.



CHAPMAN'S LIST 960 FORGED Gate Valve

The Chapman Valve Manufacturing Company
INDIAN ORCHARD, MASSACHUSETTS

Industry Speaks

Electronic Brains Run Many Plants

Adapted from comments by G. M. Muschamp, chief engineer, Brown Instruments Division of Minneapolis Honeywell Regulator Co. at the Sixth National Instrument Exhibit, Houston, Texas.

AUTOMATIC control instruments that *practically think* are doing a big job in controlling factory processing operations—freeing technical manpower for more creative assignments.

Instrumentation cuts horizontally across practically every industry in which materials are handled and processed. Chemicals, petroleum, pharmaceuticals, paper, textiles, foods, steel, glass—these and many other industrial products, on their way from raw materials to finished commodities, pass through several environments which must be controlled within rather narrow limits by instrumentation.

Instruments are bringing about increased product quality, and are decreasing waste and rejects. They are saving water, steam, fuel, and other utilities, and are enabling operators to do a better job in less time. Also, in hundreds of instances, they are making processes and products possible that otherwise would still be on the drafting boards or in the laboratory.

Control by instruments permits more latitude in the design of process equipment. This will lead eventually to economies in the building of this manufacturing equipment, and will raise the quality and lower the cost of the product of the equipment.

For example—non-uniform heating used to trouble the meat packing industry, resulting in under-curing in the top part of the smoke-house and over-curing in the lower part. This required an extension of the curing schedules to allow for lower temperature and smoke density at the top of the house. New ideas in smoke-house design, involving forced air circulation, air conditioning, insulation and instrumentation to maintain temperatures at pinpoint accuracy, have brought economies and a better product to meat packers.

Earth's Oil Supply May Be Endless

Adapted from comments by J. Calvin Brown, president, The American Society of Mechanical Engineers, at the sixth annual conference of the petroleum division of the ASME in Tulsa, Oklahoma.

QUOTING from a lecture of Dr. Robert A. Millikan, noted physicist, Mr. Brown said it is "orthodox astronomy" that the stars radiate away their masses through the mere act of giving off light and heat.

The sun, with its enormous interior temperature of about 40 million degrees centigrade, transforms its mass into radiant energy which is received by the earth where part of it is stored in coal and oil. Mother Earth has stowed away in coal alone enough solar atomic energy to keep us going for 4,000 years at the world's present rate of use of heat and power, said Mr. Brown, concluding his reference to Dr. Millikan's remarks.

Therefore, there is some doubt whether or not we will exhaust all our oil supply, because if this energy sent to the earth from the sun is actually stored in the earth then oil will be continuously formed by a process of transformation.

Eight Jobs for the Plant Foreman

Adapted from comments by E. S. Howard, manager of production training for the Minnesota Mining and Manufacturing Co., at the management session of the ASME's fall meeting.

EIGHT "musts" will assure top management that its information, skills, and techniques are effectively applied at the first-line production supervisory level. The tasks, to be performed by shift foremen, are:

1. work distribution
2. job instruction
3. work simplification
4. human relations
5. getting new employees off to the right start
6. directing technical assistants
7. making necessary reports
8. receiving instructions

Although this may seem simple, it was evident in a recent supervisory check that in the overwhelming majority of cases the supervisor actually had no clear concept of exactly what his job entailed or what was required of him.

Many industrial organizations spend considerable time and money on the development and administration of training programs designed to improve the effectiveness of production supervisors. Much of such training effort is not effective and first-line supervisors do not actually apply the management information, skills and techniques around which the supervisory training is developed.

A person's boss—his immediate supervisor, is the person to whom he listens with a different set of ears than he listens to anyone else.

Boss Must Be Trained

To assure application of training at the first-line supervisory level, a man's boss must be trained to train him. General foremen must receive training on how to instruct their shift foremen. In the Minnesota Mining and Manufacturing Company's program, the eight *musts* were drawn up arbitrarily as covering the job of first-line shift supervisors. This had the additional advantage of making sure the general foreman knew what to expect of his shift foremen.

The company allocated a certain percentage of the shift foremen's day to each of their eight tasks as something for the foremen to shoot for. Although none of the *musts* was more important than any of the others, the most time (45 per cent or 3 hours and 36 minutes) was given over to job instruction as the *guts* of getting out production.

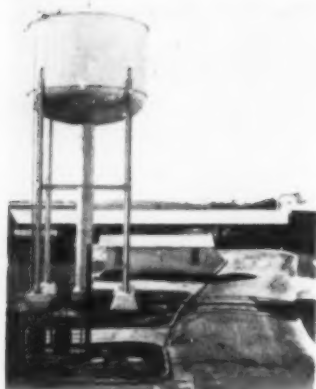
Next in order of time, came work simplification with an allotment of 11 per cent, or 55 minutes. Human relations received five per cent, 24 minutes. Included in human relations were preventing and handling grievances, maintaining discipline, giving orders and following up, etc.

Eight per cent of the day, 38 minutes, was set aside as *lee-way time* to provide the foremen with some flexibility in organization of their time and to combine with time reserved for other responsibilities which might become available, such as the eight per cent reserved for getting employees off to the right start, during those periods when no new employees were being hired.

Plant Modernization

By CHARLES A. LAWLER and D. M. BENTLEY

of H. E. Boyay, Jr., Consulting Engineers, Houston, Texas



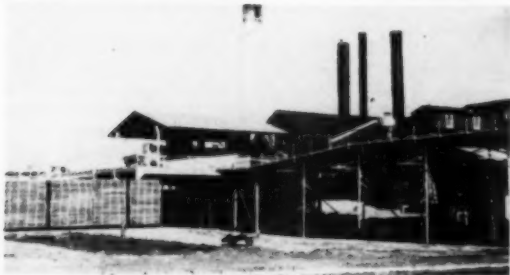
Paved roads with curbs and gutters have made access to various parts of the plant extremely easy as compared to most lumber mills. Landscaping with St. Augustine grass, flowers, and shrubbery followed during the final stages of construction.

Below—Stacked lumber on green storage trucks is shown ready for charging into the modern cross circulation overhead fan kilns. The operators' building, extending across the full width of the 7 dry kilns, houses all power, heating and control equipment for the kiln drying process.



Below left—Trimmer saw and green lumber conveyor structure, adjacent to existing Sawmill #1. Green lumber transfer runs parallel to green conveyor and passes underneath the trimmer structure to discharge loaded kiln cars of lumber to the green storage area ahead of dry kilns at right.

Below—General view shows edge sorter building, stacker building, unstacker building (at extreme right) and interconnecting covered stick and truck return structure.



Program: Selective cutting automatic end trimmer; automatic edge sorter, stacker, and unstacker; modern kilns; belt and chain conveyors; buildings and related structures.

Results: Southern Pine now producing 2,500,000 ft of pine and 1,000,000 ft of hardwood each month, with saving in manpower of 30 men compared to operations prior to initial modernization step.

A long range modernization program was conceived several years ago by the Southern Pine Lumber Company of Diboll, Texas, and this consulting engineering organization. A study of production methods and the process with flow diagrams, and a heat balance of the power and steam systems, indicated that the program should be implemented with a plan that embraced several distinct projects.

The first project covered the manufacture, handling and processing of lumber between the sawmill and the existing rough storage facilities. Ground was broken for the initial phase in April, 1949 and the modernized portion of the mill put into full production in October of 1950.

Automatic Trimmer

First innovation was the adaptation by Stetson-Ross of a planing

mill trimmer to use as a trimmer at the sawmill. To our knowledge, this is the first selective cutting automatic end trimmer of large size to be used in the South.

Live rolls carry the entire production of the pine mill edger straight out of the sawmill building onto the accumulation table ahead of the trimmer, which can handle stock up to 36 ft in length. The trimmerman, from his station above the chain, can selectively trim for grade improvement with any number of saws by push button controls.

The trimmer feed chain was designed to operate at speeds varying from 80 to 108 fpm, and the trimmer saws, which cut from an overhead position, are actuated by electric solenoids. Saw drive motor is 50 hp and feed table chains with lugs spaced on 29-in. centers are driven by 7½ hp motors. Any board which passes through the trimmer and is not selectively cut for grade is automatically end trimmed. The trimmer is housed in a concrete and steel structure at sawmill floor height and protected against fire by a sprinkler system.

Edge Sorter Operation

Due to the necessity of preserving certain existing facilities, it was necessary to locate the edge sorter building some 230 ft from the trimmer and change the zero line, or lumber even-end line, from one side of the flow to the other. A diagonally traveling chain located at the end of the trimmer off-bearing table moves all multiple trimmer cut pieces over to the trimmer zero line; lumber is then conveyed and dropped on helix line-up rolls which transfer it to the other side and deposit it properly aligned on the cable edge sorter feed conveyor.

This conveyor is over 200 ft long and consists of six ¾-in. diameter wire cables running over 40-in. diameter sheaves which are supported on a structure 20 ft above the ground, or sawmill floor height. A short section of this conveyor approaching the edge sorter is a chain conveyor and is controlled by foot button.

As the lumber reaches the feeder station of the edge sorter, the feed-

erman turns the boards on edge and feeds them into several slots for further automatic sorting into 27 separations. Feeding of the many closely spaced boards is made easier by the fewer number of slots from which to make a selection, by the foot controlled *bring-in* section of the feed conveyor, and because all boards reach the separations with the lumber being kicked out into accumulation bays along both sides for the length of the 280-ft building. Provisions were made so that more feed slots could be added and the building lengthened if more separations were desired in the future.

Vertical slot walls which run the length of the building are of steel and surmount a live roll conveyor which moves the boards along at rates up to 15 fps. After feeding, the remainder of the edge sorter operation is entirely automatic. As the boards travel along the rolls on edge they are automatically measured and sorted according to length and kicked off into accumulation bays of the proper length designation.

The automatic feature of the edge sorter is patented. Mechanism was designed and developed in conjunction with the Southern Pine Lumber Company. Device consists of a system of limit switches which can actuate an air operated gate to deflect boards at the proper instant. One such device is required for each separation or accumulation bay desired.

Production Flexibility

The decision to use the edge sorting principle was made in the early planning stages. It was agreed that this commonly used principle was desirable because of its simplicity and savings in manpower to be expected would make the investment

The structural steel building housing the automatic stacker is placed adjacent to the edge sorter building and a cross conveyor carries sorted lumber from edge sorter to stacker for automatic stacking on kiln cars. Loaded cars are rolled out to the green transfer on the out-feed track in foreground.



pay for itself. The primary purpose of the edge sorting machine is the separation of boards by lengths and thickness; but it has another and no less important function in that it becomes a mechanized accumulation point in the production line.

There are sufficient bays to store the equivalent of one and one-half to two kiln cars of lumber. Three to four days' production can, therefore, be stored if necessary, as in a surge tank, with the ability to mechanically move the product back into flow. This flexibility is accomplished by means of mechanized accumulation bays.

In each bay there are separately powered transfer chains or conveyors on which the sorted lumber falls. Running along the edges of the building at the foot of the accumulation bay conveyors are mo-



Design Features at Southern Pine Lumber Company

1. Adaptation of a planing mill trimmer to use as a trimmer at the sawmill. This is one of the first selective cutting automatic end trimmers of large size to be used in the South. (Check Automatic Trimmer)

2. Utilization of the edge sorter building as a mechanized accumulation point in the production line. There are sufficient bays to store the equivalent of one and one-half to two kiln cars of lumber. Three to four days' production can, therefore, be stored if necessary (as in a surge tank), with the ability to mechanically move the product back into flow. (Check Production Flexibility)

3. Elimination of many corrosion and maintenance troubles usually encountered in kilns. Roof consists of Zonolite slab, primed with a coat of coal tar pitch and a coat of pitch between each layer of three ply coal tar rag felt built-up roof added. Excellent insulating value conserves heat and saves steam. (Check Kiln Modernization)

tor driven 30-in. wide belt exit conveyors which move the lumber to the stacking operation at speeds up to 400 fpm. The accumulation bay conveyors and the exit conveyors are controlled by the unloaderman, depending on the size of lumber being stacked at the moment for kiln drying. The accumulation bay conveyors can also be controlled from above the sorting rolls by the deck utility man to move the lumber outward from time to time and make room for more sorted lumber. Since the stacking operation is located on one side of the building, the edge sorter includes a cross-conveyor to bring lumber from the off side bays and onto which all belt exit conveyors discharge for feeding to the automatic stacker.

The stacker is housed in an adjacent concrete and steel building, and has a feed conveyor which ties in with the edge sorter conveyor system. The stackerman has control of the feed conveyor and emer-

gency control of the edge sorter belt exit conveyors. The stacker selected was a Moore Dry Kiln Company 30-ton cable lift platform stacker for handling 6 to 20 ft lumber to kiln loads 8 ft wide by 11 ft 6 in. high. The machine has the ducking dog type stacking mechanism with 5 carrier and 4 pusher chains, and automatic sticker placers with 11 sticker pockets. All pine production is handled through the edge sorter and to the stacker as outlined.

Hardwood lumber from the air drying yard is introduced by lift truck onto the cross-conveyor at the opposite side of the sorter building for transfer to the stacker. Space and planning was provided for a second stacker for future increase. Loaded kiln cars leave the lowered stacker platform by gravity to a feed track for the green transfer.

Due to supporting soil conditions and terrain, the 307-ft-long green transfer is mounted on a reinforced

concrete beam and column structure supported on spread footings. The dry transfer also has a concrete base designed as a flat slab supported directly on earth and the space between track bases is concrete paved and shaped to serve the additional purpose as a surface water drainway for cooling shed and dry sorting areas. The transfer cars selected were Moore Dry Kiln Co. 7½-hp electric driven, end-loading, with a maximum capacity of 30 tons and equipped with a drum type car puller.

Kiln Modernization

The drying facilities needed replacing, and as rather large steam savings were anticipated, the 18 existing kilns were razed and replaced with 5 double track 26 x 120 ft and 2 single track 14 x 88 ft brick kilns. Foundations and steam trap service pit were of reinforced concrete with continuous strap footings. Walls are 12½ in. thick and built of No. 1 common red dry pressed brick with the interior coated with 3 gallons of kiln-coater per square.

The roofs of the kilns represent a new design and departure from standard practice. The completed roofs have an excellent insulating value to conserve heat and save steam, and the method of construction eliminates some of the corrosion and maintenance troubles usually encountered. Construction employed the use of specially designed 3 in. reinforcing bar trusses and welded wire reinforcing mesh invested in a monolithic Zonolite slab that is supported by transverse I-beam roof joists at 8 ft centers as the only exposed members. The Zonolite slab was primed with a coat of 2 gallons per square of coal tar pitch, and a coat of pitch between each layer of three ply coal tar rag felt built-up roof added. This base was finished off with 100 lb of pitch and 800 lb of pea gravel per square.

An operators' building, which contains all drives and controls and overlooks both the kiln roofs and the green storage tracks, runs along the width of the installation. Each kiln is of the reversible, cross-circulation, overhead fan

Automatic unstacker is also housed in a modern concrete and steel building. All buildings for the entire project were designed to conform to the overall architectural pattern chosen.



type, and all equipment and recording controls were furnished by Moore Dry Kiln Company.

Cooling Area

The green storage tracks ahead of the kilns are supported by concrete paving, and tracks are long enough to allow either the charge system or the continuous method of loading kilns. On the discharge side of the kilns there is a steel constructed cooling shed with more than 18,000 sq ft of storage space. The roof contains gravity-type ventilators which allow the proper circulation of air and cooling of lumber.

Automatic Unstacker

From the cooling area, lumber is transferred via the dry transfer to an automatic unstacker. The latter is housed in a separate steel building and was placed in line with the stacker to facilitate stick and kiln car returns. The kiln cars are returned entirely by gravity for a distance of some 150 ft. The sticks, which are automatically separated as each course of lumber is pushed off to the dry sorter chain, are returned to the stacker building by a motorized conveyor which is under the control of the unstackerman. The unstacker is a Moore Dry Kiln Co. 20-ton cable platform lift type with automatic rake off arms and wring rolls for the removal of sticks.

Subsequent Handling

Lumber from the unstacker flows out onto the dry sorter conveyor which is made in two sections. One section has 4 strands of $\frac{3}{4}$ -in. diameter wire rope cable running for 175 ft over 38-in. diameter sheaves. The second section is similar except that it has only 3 cables, and each section is driven by a 20 rpm, 15 hp gearmotor. The dry sorting conveyor is housed in a steel frame

The second phase of the extensive overall modernization program at the Southern Pine Lumber Company, Diboll, Texas, — a new wood treating plant — will be featured in the December issue of SP&I. Additional phases of the program are still under way and will be covered by future articles.

Lumber Mills Built With Eye to Permanence

The timber growing industry has reached a sustained yield basis through modern forestry and timber farming methods. It is only natural that progressive lumber manufacturers, seeing a more stable source of supply and a more stable economic condition in their industry, should look to the future and plan the modernization of old mills and the construction of new mills on a permanent basis.

As little as 25 years ago, the yearly national cut was four times the yearly growth and mills built then were not built with such an eye to permanence. Today, the picture has changed radically with growth already up to 98 per cent of yearly cut, and mill operators are beginning to take advantage of the situation to perpetuate their companies.

Typical is the modernization program at Southern Pine Lumber Company of Diboll, Texas. The plant is now one of the most up-to-date and streamlined operations to be found in the industry. The results are a greater ease of production, improved working conditions and worker morale, increased efficiency, safer working conditions, and a greater production volume of higher grade Southern yellow pine and hardwood lumber.

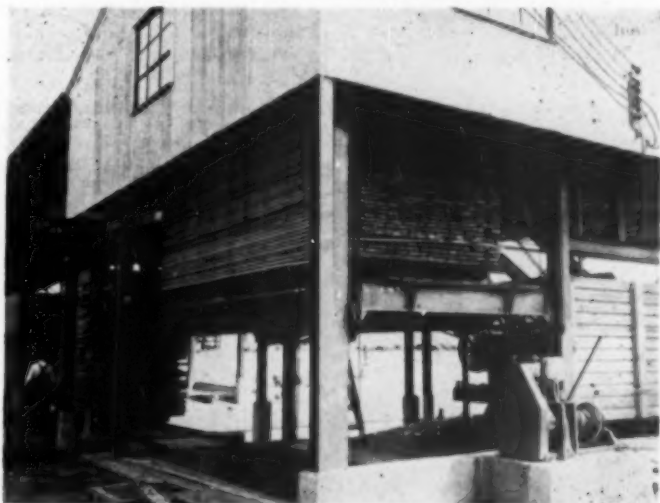
building with corrugated iron roof which measures 40 x 372 ft and includes a dry pipe sprinkler system. The pullers' platform is located at the proper working height with lumber being pulled off to packages for handling to existing rough storage building. A 40 ft wide concrete slab runs the length of the building on the pull off side to facilitate the handling of packages by trucks and carriers and will eventually be part of the floor of a future rough storage building. When the new rough storage building project construction is com-

plete, lumber will be pulled off directly to packages for handling to storage by overhead crane with lumber package grapple.

At the feed end of the dry sorter building just after the grading station, boards to be reworked are pulled off the sorting conveyor by an automatic electric swede and passed by a belt conveyor to an adjacent remanufacturing building. By the reworking of boards there is a distinct value to be gained in the upgrading of lumber. The grader at the dry sorter merely

(Continued on page 116)

Dry kiln operators' building is of corrugated asbestos siding and roofing, steel framing, and concrete flooring. Operators' building was prefabricated in panels of length equal to one kiln width to accommodate the step-wise construction program and to make erection simpler and easier.



Houston, Texas, was host September 10-14th to the Sixth National Instrument Conference and Exhibit in the Sam Houston Coliseum. Running concurrently with the exhibit were 10 technical sessions of the Instrument Society at which over 40 technical papers on all phases of instrumentation were presented.

The Instrument Society of America, organized in 1945, is the newest of the major technical societies. Since then, the Society has grown to 51 local sections with a membership of over 5,000. There are now 14 sections in the South and Southwest. National Secretary is Richard Rimbach of Pittsburgh, Penna.



Measurement, control, inspection and testing at

Houston Instrument Conference and Exhibit

COMBINING a series of highly technical sessions with an exhibition of instruments and controls, the Sixth National Instrument Conference and Exhibit, held at Houston, Texas, September 10-14, featured the astounding development of automatic controls and recording instruments since the I.S.A. was founded six years ago.

Former I.S.A. exhibits have been held in Chicago, Philadelphia, St. Louis and Buffalo. This was the first National Instrument Exhibit and Conference to be held in the South.

The technical programs, each un-

der the sponsorship of one of the technical societies cooperating in the project, featured instrumentation as applied to such specialized subjects as infrared instrumentation and pipeline transmission and control, with the greater emphasis on instrumentation in production.

Instruments exhibited were of two general classes: those designed for laboratory use and those for adapting accurately controlled laboratory processes to production operations. There were 149 exhibitors with more than 240 separate exhibits.

Throughout the exhibits and

technical sessions it was emphasized that automatic controls can see more, hear more, think faster and toil more tirelessly than human beings. The age of the push-button factory is approaching. Instruments now guide and control an increasing number of industrial processes by making production equipment behave as prescribed. These automatic devices watch and regulate the work being performed even so far as attending to the mixing, testing, correcting and packaging while the instrument man sees that the instruments are functioning properly.

Five aisles of the seven comprising the exhibit area of the Houston Coliseum. This view was taken two hours after the doors were opened on the second day of the exhibition and is typical of the 7,000-8,000 Southern and Southwestern plant personnel attending the show. The general public was not admitted.





Four well known symptoms of Motor Trouble

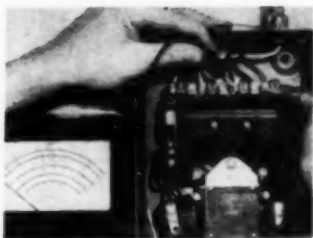
By BENJAMIN HANTMAN

Works Engineer
Motor and Control Division
Westinghouse Electric Corporation

troubles . . . causes . . . what to do

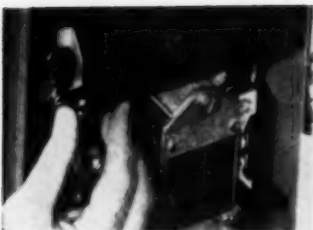
1. Motor does not turn over, and is quiet

Causes: Motor not getting voltage;
main line open; control circuit open.



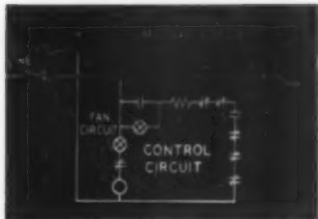
Left — Check voltage at line terminals with voltmeter or test lamp.

Right—If no voltage at starter, check main switch and line fuses.



Left — If power is available, check contactor to see if it is mechanically free to operate.

Right — If contactor operates freely, check control circuit for possible open circuit, as follows:

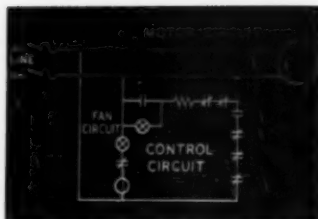


symptoms of motor trouble—continued



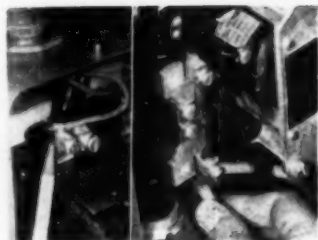
Left — No voltage across the contactor coil means it is probably all right, and the control circuit is open elsewhere. Double check coil by measuring its resistance — **BE SURE POWER IS OFF.**

Right — Check control contacts, motor overload relay, or motor protector.



Left—Since most contacts are enclosed, check with a voltmeter. A voltage across any contact indicates it is open.

Right—Check for frayed wires and poor terminal connections. Vibration is often the cause of loose connections.



Remember that if the motor does not turn over and is quiet, it probably means there is no voltage at the motor, so use a voltmeter, test lamp, or resistance meter to locate the open circuit.

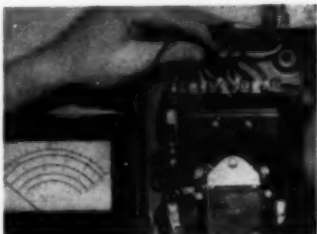
2. Motor does not turn over, but growls or is noisy.

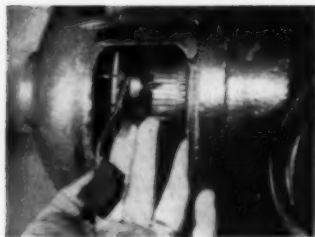
Causes: Mechanical jamming; under-voltage; faulty motor.



Left—Try to turn motor shaft. If it does not turn freely, the load is jammed or the bearings are seized.

Right — If shaft turns freely, check line voltage with motor on the line. If voltage is less than 10 per cent below name plate rating, motor can't start under load. If voltage is within rating and it's a three-phase motor, check all three phases. One line may be open.





Left—If it's a repulsion or d-c motor, check brushes for contact with commutator. Check for dirty commutator.



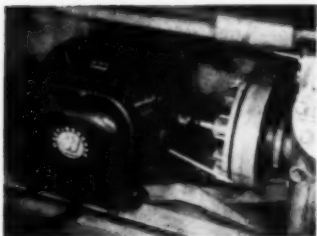
Right—If it's a capacitor motor, check centrifugal switch or relay for operation—it may be stuck open, leaving the starting winding disconnected. Check capacitors by measuring with a resistance meter.

Remember that if the motor does not turn over and growls, the line voltage may be low, something is jammed, or the motor is faulty.

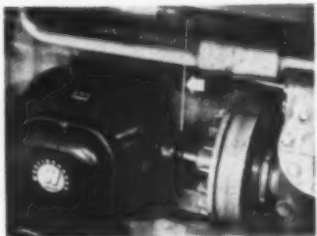
3. Motor gets up to speed, but runs too hot.

Causes: Under- or over-voltage; poor ventilation; overload; faulty coupling, centrifugal switch, or starting relay.

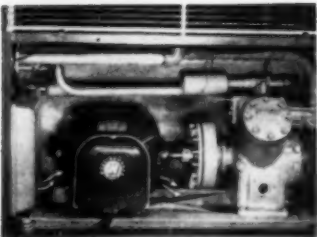
Left — Don't guess — measure motor winding temperature with a thermometer. Piece of clay or even chewing gum stuck on bulb end before it is inserted into stator winding will help get an accurate reading. It should not exceed 90 C (194 F). Winding temperature is affected by ambient or enclosure temperature.



Right — Ambient temperature should not exceed 40 C (104 F). Most drip-proof motors are rated a 40 C temperature rise (by thermometer) over a 40 C ambient, and include a 10 C safety factor.



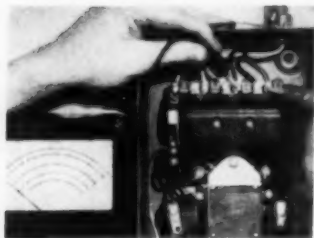
Left—Check ventilation of motor enclosure to see that the openings are not clogged with dirt or lint. Look for other obstructions.



Right—Check motor itself to make sure it is not fouled with dirt. A motor needs plenty of breathing space if it is to run cool.

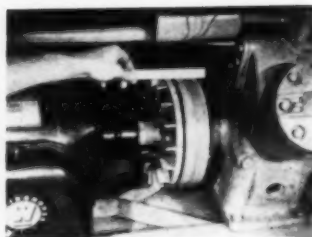
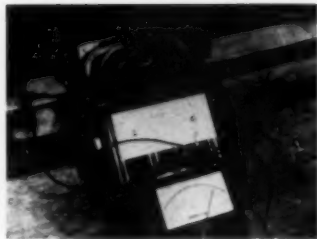


symptoms of motor trouble—continued



Left—Check line voltage to see that it is within 10 per cent of rated value. Either over- or under-voltage will cause motor heating. If it's a three-phase motor, check all three phases.

Right—Check the motor current against the name plate current to see if the motor is overloaded.



Left—Check line-up of the motor and its load. Maybe one or the other has shifted on its foundation. Misalignment causes added motor load, as well as rapid wear of coupling or belts.

Right—Check proper operation of centrifugal switch or starting relay of single-phase a-c motors, and the starting mechanism of repulsion and d-c motors.

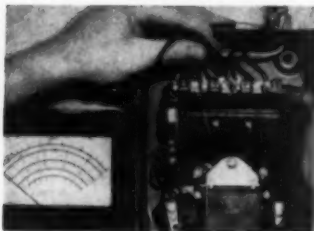
Make sure the motor isn't cycling (repeated frequent starts) due to faulty control circuit operation



Remember that if the motor runs too hot, overload, ventilation, couplings, or starting elements may be the cause.

4. Motor turns over, but will not get up to speed.

Causes: Under-voltage; overloaded motor; poor commutation.



Left—Check line voltage under motor starting conditions. It should not dip to less than 10 per cent below the motor rating.

If voltage is satisfactory, motor may be overloaded. See that motor size is correct.

Right—If it's a repulsion or d-c motor, check for worn brushes or a dirty commutator. If it's a capacitor motor, perhaps the centrifugal switch isn't opening, leaving the starting winding on. This will result in eventual capacitor burn-out.



Remember that if the motor turns over but will not get up to speed, there is either low line voltage, the motor is overloaded, or it is defective.

Krafco Reports on Palletless Handling

By R. H. HAAS

Assistant to vice president and general manager

KRAFCO Container Corporation at West Monroe, Louisiana, is the fabricator of corrugated shipping containers and corrugated sheets sold by Kraftex Enterprises, Ltd., of Dallas, Texas.

The operation comprises two corrugators, a printing and cutting department, and a complete line of finishing equipment, including stitchers, tapers, a folder gluer, and a partition machine. The product is manufactured exclusively from virgin kraft, including the corrugating medium as well as the liners.

Transportation of the rolls of linerboard is accomplished by three fork trucks, two Baker units and one Automatic.

The Pul-Pac truck approaches the carrying sheet as the rack is extended. Truck operator opens jaw and the three-inch flap enters. By reversing control lever, jaw automatically closes and rack is retracted, drawing load onto carrying plate.

Two of the five Clark Pul-Pacs utilized in Krafco's West Monroe, Louisiana, operations. Pusher rack removes the load—the rack moves out away from the truck and pushes the load off the plate. Extra space ordinarily taken up by pallet depth is available for additional storage.

After combining the linerboard into corrugated sheets on the corrugator, all transportation to and from storage and to and from the various cutting and finishing machines is accomplished by five gasoline driven Clark Pul-Pacs.

Scrap sheets of corrugated board are laid on the floor and the good sheets are stacked on top, leaving the scrap sheet protruding about six inches to provide a tongue for the Pul-Pac to grasp and pull the load onto the blade. Loads are generally about six feet high. In some instances, we are able to double stack loads with

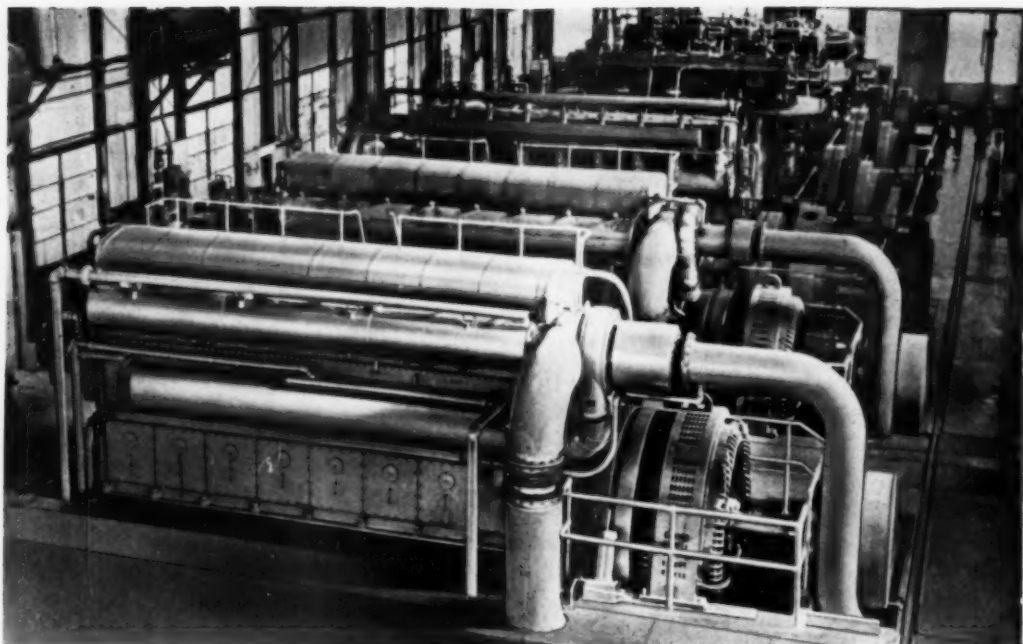
the Pul-Pac, depending upon the sheet dimensions and the stability of the load.

Combination push and pull attachment has a load carrying plate, pusher rack, and a gripper jaw. Carrying plate, replacing ordinary forks of a truck, holds and supports load. Pusher rack removes load. Gripper jaw places the load on the plate.



Push and Pull





Nordberg Supairthermal Engine Installed at Fernandina, Florida

Florida Public Utilities Company installed this Nordberg Supairthermal engine at Fernandina, Florida, in March 1951. It has 8 cylinders of 16-in. bore and 22-in. stroke, and is rated 2100 hp at 327 rpm. It is direct connected to a 1485 kw, three phase, 60 cycle, 2400/4160 v Westinghouse generator.

The engine immediately behind the new Supairthermal is a conventional Nordberg turbocharged engine installed in November, 1948. The older engine, which is of the same bore and stroke, and operates at the same speed as the Supairthermal, is rated at 1630 hp and drives a 1150 kw generator.

Florida Public Utilities Company Operates

New Supairthermal Diesel Engine

Fifteen per cent higher rating and improved thermal efficiency over conventional turbocharged units claimed for new Diesel engine.

ALTHOUGH Diesel engines are the most efficient means of converting fuel to power, more than 60 per cent of the potential power in the fuel is wasted in the form of heat. Part of this heat goes out the exhaust pipe and presents no serious problem, but an-

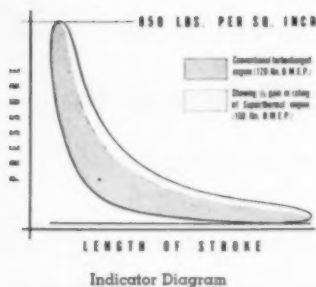
other large portion which must be removed from the engine by means of the cooling water and lubricating oil does present difficulties.

Most modern Diesel engines, although structurally able to yield greater horsepower, have reached the point where their safe rating

is limited by the inability of the surfaces in contact with the combustion gases to continuously stand higher temperatures without heat failure or destruction of piston ring lubrication. Turbocharging four-cycle Diesel engines, introduced some years ago, marked one of the earlier achievements in overcoming these limitations and resulted in increasing engine ratings of as much as 50 per cent.

Intercooling

A recent significant advancement,



made by Nordberg, is cooling the intake air after the turbocharger. Intercooling, as it is known, is accomplished with a finned tube type of air to water heat exchanger built into the engine and through which the cooling water is circulated before going to the regular jacket water cooling system. Where cooling water is available at a temperature which will cool the intake manifold air temperature to 90 F, (D.E.M.A. standards provide for rating Diesel engines on the basis of 90 F intake air conditions) intercooling will raise the engine rating about 15 per cent with no greater heat load to the cooling water and with no increase in surface temperature.

Four Improvements

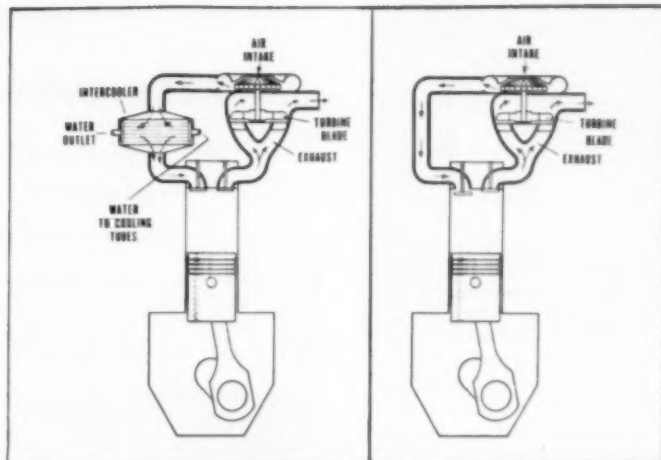
The Nordberg Supairthermal engine uses the "Miller System of Supercharging," and four improvements upon the conventional turbocharged engine are claimed.

First, a greater amount of air cooling within the cylinder is accomplished by blowing a larger volume of cooler air through the cylinder and out the exhaust pipe.

Second, the turbocharger delivers air to the cylinder at a higher pressure, thus providing 30 per cent more weight of air and making it possible to burn more fuel.

Third, by means of an intercooler on the discharge side of the turbocharger, the temperature of the intake air is cooled before it enters the cylinder.

Fourth, by closing the intake valve before the end of the intake stroke, the air within the cylinder is expanded from 15 lb pressure to 6 lb pressure at full load, and the intake air is thereby cooled another 50 F.



The intake valve of the Supairthermal engine, left, closes 45 degrees before the end of the stroke. Air inside the cylinder expands from this point to the end of the stroke.

The intake of the conventional turbocharged engine, right, remains open until the end of the stroke.

The turbocharger used with the Supairthermal engine is driven by exhaust gas and requires no power from the engine. At rated full load, it delivers air to the intercooler at

15 lb pressure. Because of this compression within the turbocharger (from atmospheric pressure to 15 lb pressure), the air temperature increases about 160 F.

Comparison of Conventional and Supairthermal Engines

Here, the conventional, low pressure, non-intercooled engine is compared with the new Supairthermal engine. Both are 13-in. x 16 1/2-in. and are operated at 450 rpm, 1237.5 fpm piston speed, and 850 psig firing pressure. Ambient temperature is 90 F.

	Low Pressure Supercharged	Supairthermal Engine
Brake horsepower for continuous service	150	200
Brake mean effective pressure (psi)	120	160
Air temperature at supercharger discharge (°F)	142	250
Air temperature to intercooler (°F)	...	250
Water temperature to intercooler (°F)	...	90
Air temperature after intercooler (°F)	...	100
Air temperature entering engine (°F)	142	100
Air temperature at beginning of compression (°F)	142	50
Air Pressure at supercharger discharge (psig)	4	15
Air Pressure entering engine (psig)	4	15
Air Pressure at beginning of compression (psig)	4	6
Heat to cooling water		
Btu/minute per Brake Horsepower	16.20	12.15
Total Btu/minute at above rating	2430	2430
Heat to lubricating oil		
Btu/minute per Brake Horsepower	6.66	5.80
Total Btu/minute at above rating	1000	1160
Heat removed by intercooler		
Btu/minute per Brake Horsepower	...	8.2
Total Btu/minute at above rating	...	1645
Fuel Consumption (Pounds/BHP/HR)		
Full Load	.375	.369
3/4 Load	.37	.355
1/2 Load	.375	.365
Mechanical Efficiency at full load (%)	83.2	85.4

But the intercooler then cools the air to within 10 F of the cooling water temperature. Thus with 90 F cooling water, the air enters the engine cylinders at 15 lb pressure and 100 F.

The point at which the intake valve closes during the intake stroke is automatically controlled by the pressure in the intake air manifold. For example, with a 15 lb manifold pressure, which is normal at full rated load, the intake valve closes 45 degrees before the end of the intake stroke.

This is an important difference between the Supairthermal cycle and that of the conventional supercharged engine where the intake valve remains open until the end of the intake stroke. The air in the cylinder is expanded from 15 lb pressure to 6 lb pressure as the piston continues downward to the end of the stroke. Because of this expansion, the temperature drops from 100 F to 50 F. As the manifold pressure decreases at part loads, the intake valve closes later so that the air pressure at the beginning of the compression stroke remains 6 lb.

With the increase in power, the Supairthermal engine has greater thermal efficiency, more power in less space, more horsepower per gallon of fuel, more horsepower hours per gallon of lubricating oil, less weight per horsepower, less heat loss to the water jackets and will cost less per horsepower for engine installation, operation and maintenance.

The table gives comparative data on a per cylinder basis for Nordberg four-cycle, 13 in. bore, 16½ in. stroke, conventional turbosupercharged and Supairthermal Diesel engines.

A typical application of Nordberg four-cycle Supairthermal engine is the unit installed by the Florida Public Utilities Company in Fernandina, Florida, in March of this year. This Supairthermal engine is an eight-cylinder, 16 in. x 22 in. unit which develops 2100 hp at 327 rpm. It supplements a previously installed conventional turbosupercharged Nordberg Diesel of the same size and speed rated at 1630 hp.

Tulsa's boiler room in the sky

400 Horsepower—20 Stories Up

Installational advantages—more basement storage space, less piping, and lower air conditioning load.

INSTEAD of in the conventional basement location, the boiler room of the \$6 million First National Bank building in Tulsa,

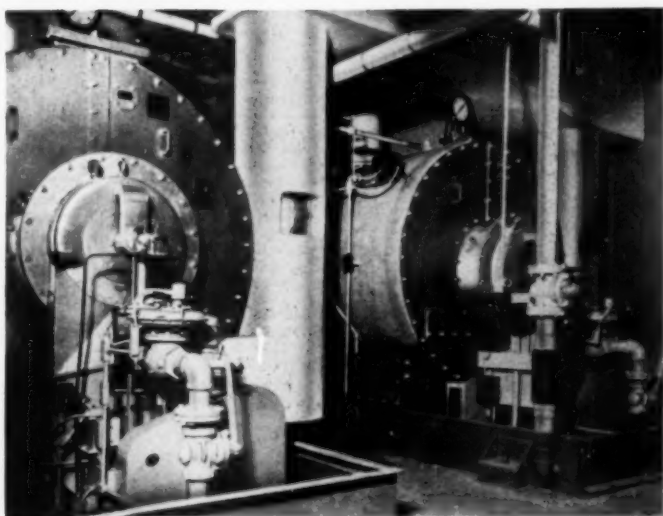


Oklahoma, is on the 20th floor. Boiler room is directly behind the 1st of Tulsa sign. There, two 200 hp Cleaver-Brooks gas fired boilers are installed along with elevator equipment and other major mechanical units.

Installation of the heating plant in this location saved valuable basement space for vaults and storage, saved stack cost and space, and eliminated heat from the basement ceiling, thus lowering the air conditioning load. There was also a fresh air intake on the top of the building and by placing the boilers at the same point, eliminated a considerable amount of piping.

Installation has been operating very satisfactorily for nearly two years. Mechanical engineers on the project were Gaynor & Albright of Dallas, Texas.

These two 200 hp Cleaver-Brooks self-contained steam boilers are located on the 20th floor of the First National Bank Building in Tulsa.



Methods of using light for Inspection Processes

*Check these four lighting techniques!
Can you put them to work increasing
the efficiency of your own department?*

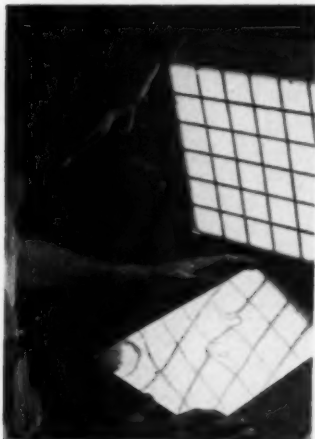
IT is no problem to increase production. All you have to do is work longer hours, hire more people, or add production units. Such procedure, however, does not increase manufacturing or inspection efficiency.

It is only by increasing production per hour, per machine, per employee, or per dollar spent that you get ahead. New machines, methods or materials are some of the ways of increasing production and at the same time reducing costs. Another, and important method, is to increase the efficiency of employees.

The workman's eyes, through his

These methods of using light for inspection processes were included in an address by V. I. Graham, district engineer, Lamp Division, General Electric Company, Dallas, Texas, at the recent Southwestern Industrial Power Application Conference. The August issue of SP&I reported on this excellent G.E. sponsored power application meeting.

Watch For Dents—Inspection of polished surface for dents by viewing the reflection of a pattern in the material. Irregularities in the reflected pattern indicate surface defects.

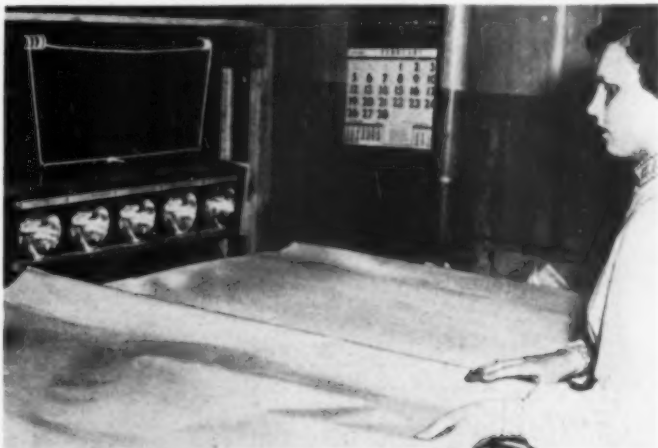


brain, tell his hands what to do. By providing proper seeing conditions the employer can increase production *per*—by making it easier for the employee to see and do the task.



Lens in the Middle—A Circline fluorescent lamp allows the addition of a magnifying lens in the center to form a supplementary lighting unit. Visibility is improved both by the increased quantity of light on the task and the enlarged size of the visual task.

Automotive Fog Lamps—Sealed-beam automotive fog lamps are used to detect flaws in coated paper sheets. The cut-off of the beam is very sharp so that the operator receives no direct glare. Defects are brought out as shadows and bright spots by the directional light.



Strain Patterns—When lamp bulbs are placed under a polariscope, strain patterns are evident. They are actually in color and indicate faulty bulbs.

Unique Welding Assembly Method

IT had been "standard operating procedure" for a leading manufacturer to farm out the assembly of vent tubes, which were a component part of tent heaters that are now being manufactured in great quantities for the Armed Services. And as is almost invariably the case, when a company is forced to subcontract some of the parts it needs in the final assembly, this manufacturer was faced with the choice of either absorbing this cut in profits, or else raising the delivery price in order to retain the same margin. This latter choice, in competitive bidding, might have meant losing the contract.

Still, the company felt they were perfectly capable and equipped to do the complete job, if they could

only find a quick and easy way of mass assembling these vent tubes, preferably in such a way that highly skilled and expensive labor could be kept at a minimum. The vent tube assembly method devised is extensively illustrated.

Savings

Before hitting on this novel method of assembly, the manufacturer had been paying 6.3 cents per assembled unit. Time studies have shown that total cost per fitting, including labor, gas, welding alloy, and flux, now comes to less than three cents per assembly. With average contracts running to about 120,000 units, that means a saving of well over \$3,600 per contract.

EutecRod 146FC (flux coated) is

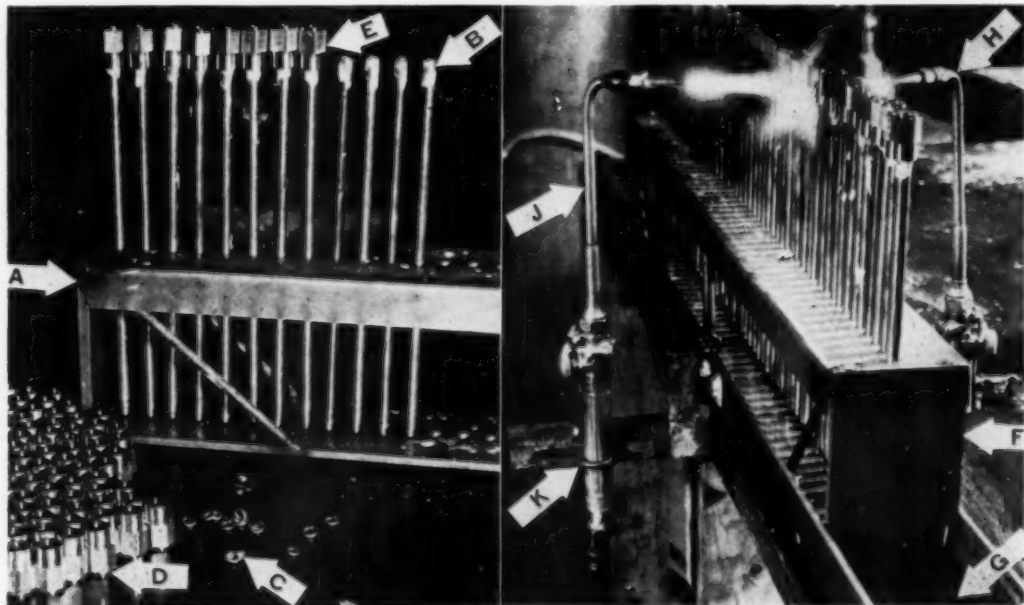
now used in the construction of these fire pots, with results which far surpass any previously achieved, when a manganese bronze rod with an excessively fuming flux was employed. To begin with, all fire pots must be pressure-tested to insure absolutely leak-proof construction. Since these units serve as fire pots in the tent heaters, even the slightest leak would be extremely dangerous to men and equipment. One hundred per cent inspection is therefore a "must," and no exceptions are tolerated. Prior to the newly introduced welding methods, roughly fifty per cent of the welded assemblies were found to be leakers, and had to be rewelded and retested. On the other hand, during a recent trial run of 84 pots for Army test-

A simple fixture was built (A), similar to a test tube rack, which would hold fifty vent tubes in a single row. A "slide" was constructed which would allow the rack to be slowly pushed past two oxy-acetylene torches, adjusted in such a way as to both pre-heat and weld the fitting to the hollow

tube. The slide is labelled (G) and (F) shows the complete fixture.

The two torches (H) and (J) are both tilted at 45° to the direction of travel; (H) is directed lower, against the steel tube, while (J) is directed against the bottom half of the brass fitting.

Uniform heating and preheating is thus achieved, which is a major factor in getting the special joining alloy to flow completely through the joint, and achieve a sound, homogenous, high-strength weld. Height of torches can be adjusted by means of the clamps (K).



ing, welded with EutecRod 146, not a single leak was detected.

Another advantage of using this special alloy accrues from the fact that its lower bonding temperature all but eliminates any chance of cracking in the weld or adjacent base metal, previously encountered.

Welding operation is as follows: Fifty steel tubes are inserted into the rack and thoroughly fluxed with Eutector Flux 1801, a product of the Eutectic Welding Alloys Corporation. It is essential that sufficient flux be used so that surface oxides that are present before welding or that form during welding will be continuously removed. Thus a chemically clean surface is maintained, which permits free capillary flow of the alloy through even the tightest clearance spaces, a primary requisite of a strong, sound bond. (When designing for thin-flowing type alloys, the clearance space at the bonding temperature should be on the order of .002 to .005-in. If two metals of different thermal coefficient of expansion are being joined, allowance must be made, so that the correct clearance will prevail after they have been heated.)

The assembly operation is further simplified through the use of reshaped rings of EutecRod 1801. Instead of requiring the services of a highly skilled welder to apply the welding alloy individually to each assembly, semi-skilled or unskilled labor can be used; the operations involved are reduced to a simple routine, and require absolutely no welding knowledge. Some pre-cut rings can be seen at (C). One of these rings is dropped into each fitting (D) and the fitting plus the ring of welding alloy is then inverted over the well-fluxed tubing.

Some of the fluxed tubes can be seen at (B). In order to be certain that the flux is spread over the entire weld area, the operator, after placing the fitting, spins it a few times. This not

only distributes the flux evenly on both surfaces, but also eliminates the need for separately fluxing the fittings.

After fifty of these assemblies have been thus prepared, the rack is pushed past the two welding torches at such a rate that it takes no more than about five minutes to weld them up. This fast rate is primarily due to the clever arrangement of two torches, which allows one of them to preheat the incoming assembly, while the other is doing the actual joining.

EutecRod 1801, the alloy used to join these units, is exceptionally free-flowing, attested to by the fact that even though the alloy is applied from one spot only, it flows through the entire joint, filling all the clearance spaces completely. Note the absence of voids or discontinuity in (L). In addition, the alloy forms a very thin fillet around the entire lower circumference of the fitting, see (M), which signifies a clean, smooth, uniform joint of neat appearance, without the need of after-machining or any kind of finishing operation.

In another sub-assembly of this tent-heater, additional savings have been effected by choosing a special alloy to meet specific requirements and arranging a mass production assembly line to make preheating and welding operations almost completely automatic.

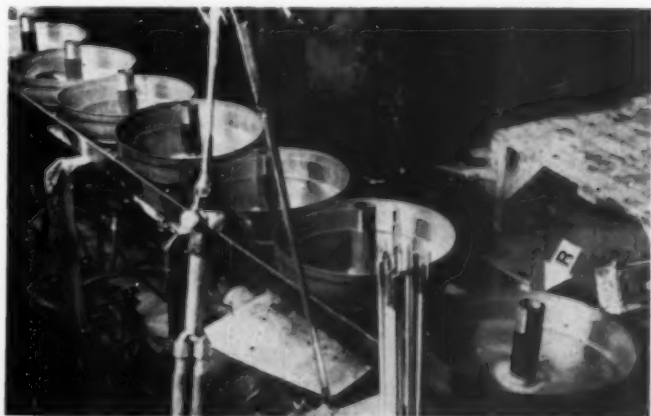
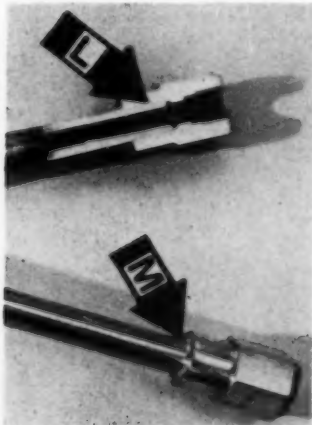
The fire pots consist of three separate components, a drawn steel shell (N), a central core and a nipple of extruded steel tubing (O) and (P). Operator at the far end of feeder line loads the line by placing shells on

to apply less alloy, since the assemblies coming off the line are "OK as welded," and since rejects due to cracking have been eliminated, a saving in cost of close to 400 per cent, as estimated by the company, is a low figure.—Philip Ziegler, Eutectic Welding Alloys Corp.

the conveyor. The core (O) has been pressed into each shell on an adjacent machine. Use of flux-coated EutecRod 146FC eliminates prefluxing.



As welded assemblies are completed and removed from feed line, welder stationed at (R) actuates an hydraulic ram by means of a foot lever, moving each assembly forward one "notch." Length of feed line was determined almost purely from a consideration of preheating requirements. Conveyor system is so arranged that at each stop the fluxed assemblies are preheated a little more, the gas flames underneath each being adjusted to permit a gradual and uniform rise to bonding temperature. When the preheated unit reaches the welder, only sufficient heat is added with an oxy-acetylene torch to melt the welding alloy and complete the joint. A counter is incorporated into the system for an automatic tally of the day's work.



Serving 1,000 good hot meals each working day in

Hanes' Ultra-Modern Cafeteria

*This North Carolina firm is not in the restaurant business
but employees receive good, hot food at reasonable prices.*

Problem: Hanes Hosiery Mills Co., Winston-Salem, N. C., had the problem of serving a large group of employees good, hot meals without going into the restaurant business.

Solution: Hanes employed the services of an industrial catering firm—the Harding Williams Company of Chicago. Using the services of this firm, Hanes is able to confine company activities to knitting hose—at the same time, mill employees are served good food at minimum prices.

How It Works: The industrial catering firm, because of extensive experience in food preparation and purchase, can operate a cafeteria or restaurant more economically and serve better food than could an industrial plant

trying to manage an operation foreign to its field, according to Hanes.

Hanes Hosiery furnish dining and preparation area and all equipment. Hanes also maintains all equipment and supplies utilities. In other words, the physical plant is furnished and maintained by Hanes and Harding Williams employees purchase the food and prepare it. They also serve the cafeteria counters and collect the money.

Monthly accounting is rendered showing gross sales, less food cost and all expenses including management fee. Profit or loss is assumed by Hanes, but the operation is on a non-profit basis. Cafeteria is intended to operate at actual cost, but a reasonable operating loss is permissible. Result is that the Hanes employees receive quality food at non-profit prices.

UNTIL three years ago, the employees at Hanes Hosiery either brought their own lunches or purchased sandwiches, crackers, or soft drinks from a canteen wagon. Most employees ate their lunches in the area in which they worked. Under these conditions, maintaining cleanliness was difficult, and no opportunity was available for a change of scene through-

out the work day. Although this arrangement could hardly be classified as sub-standard, management realized that many advantages would accrue if there were a good dining room on the mill grounds.

A large ground floor room, about 85 x 185, was cleared and a complete kitchen, and a cafeteria-type dining area was set up. Excellence of design and wise selection of

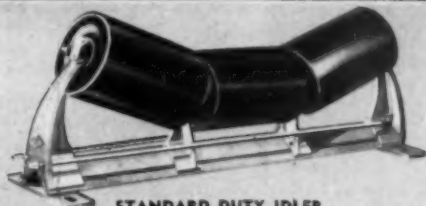
equipment makes it one of the finest industrial cafeterias in the country. In fact, in a recent national competition for design, layout, and equipment, this cafeteria won a merit award.

Hanes Hosiery did not attempt to operate the cafeteria. Instead, they contracted with Harding Williams Company, Chicago, Ill., to operate it for them.

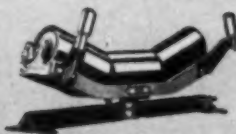
Cafeteria dining area, with a capacity of 540 persons, is attractive and comfortable. Area is well lighted by fluorescent fixtures and is air conditioned with controlled temperature and humidity. Floor is of pigmented, dark red, concrete. Walls are of glazed structural tile of an attractive light green color.



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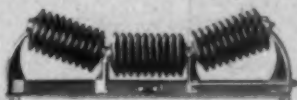
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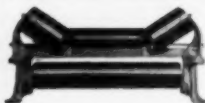
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lb. If only 1 per cent of this total hardness going through the condenser dropped out as scale, we would still have 2100 lb of scale formed in a day.

This slight drop in hardness—1.8 ppm out of 180—would scarcely be detectable by analytical means, but would certainly drop the vacuum appreciably even in a few hours' time.

Once-through water

Fortunately with once-through usage of condenser water from a river or lake, we rarely ever experience troublesome deposition of hardness.

The reason we do not experience troublesome deposition of hardness on this once-through usage is that a water in its natural environment such as a river or a lake has already adjusted itself to a stable form. The temperature rise through the condenser is very slight and the velocity is very high. The slight temperature rise is not enough to upset the stability of the water and the high velocity gets the water through the condenser before anything can happen to change its composition.

Again speaking in generalities, utility steam station operators are usually not troubled with corrosion in once-through cooling water usage from a lake or from a river. This can be partly attributed to the low temperatures in the condenser and to the rather common use of copper alloy condenser tubes such as inhibited admiralty metal.

Algae or microbiological slime may occasionally be a problem on river water or lake water used once-through the condenser. This problem when it does develop is usually met most satisfactorily by intermittent feed of chlorine.

Recirculating Systems

The attention of the general public has been invited during the past few years to the growing national water shortage in this country. Some states now have very strict regulations on the drilling of new water wells. In those areas not fortunate enough to have unlimited supplies of surface water available, this has presented a very serious problem and has led to the use of

recirculating cooling systems in place of once-through cooling of condensers as described above.

The other factor which may result in the installation of a recirculating system in place of once-through cooling would be a situation where water problems did develop on once-through circulating water usage which could not be economically solved on the basis of the large volumes of fresh water used each day.

A typical recirculating cooling system for condenser usage includes a cooling tower, a cooling tower basin, circulating pumps, and necessary appurtenances. The heat that is picked up in the condenser is dissipated in the cooling tower so that the water may be recycled. However, the heat dissipation in the cooling tower is accomplished by means of evaporation which concentrates the mineral solids in the system much the same as evaporation in a boiler. The result is that the hardness of the recirculating water may be double, triple, or even 10 times that of the make-up water.

Since all waters are essentially stable at their source, we do not have much of a problem in preventing scale until this natural stability is upset. By evaporating part of the water in a cooling tower, however, we unstabilized the water. Now very definitely chemical water treatment becomes necessary to prevent vacuum-robbing scale in the condenser.

There are many methods of treatment of cooling tower water used for steam plant condensers. The ultimate selection of a particular method requires a study of make-up water composition and operating conditions.

The method which we will describe is one of the newer methods applicable to a large percentage of towers.

The installation of a cooling tower and recirculating system reduces the total amount of make-up water required to only about 2 per cent of that required for once-through cooling, but we are still dealing with large volumes of make-up water. It would be completely impractical to soften these large volumes of make-up water, in

the average case. Yet we are going to concentrate the hardness and we need some method of preventing calcium carbonate scale.

One of the simplest means of accomplishing this is the feed of acid to the cooling tower water. Let us feed acid in sufficient quantities to convert nearly all of the bicarbonate in the raw water to sulfate. Now it is impossible to get calcium carbonate scale and since we will operate well below the solubility limit of calcium sulfate, our scale problems have been solved.

However, we now have a corrosion problem. Although this corrosion problem is not as severe at the low temperatures encountered in this type of system as it would be in an oil refinery cooling tower system, the corrosion problem is still present. For prevention of corrosion, we use a polyphosphate base corrosion inhibitor containing a complex synergist for protective film formation on the metal surfaces. This method of treatment thus solves the problems of scale and corrosion very nicely.

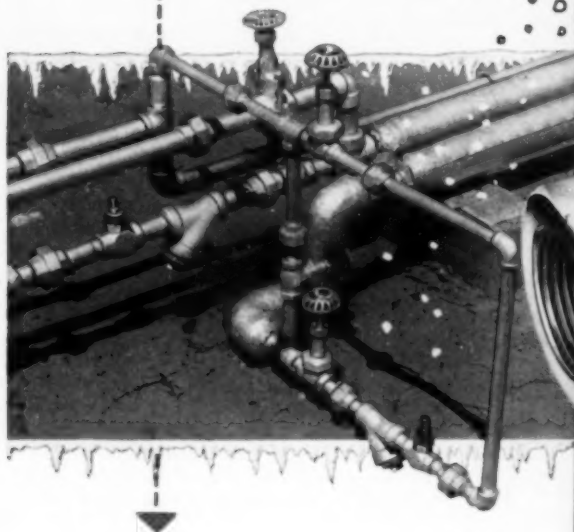
We have other water problems in the operation of a cooling tower system, however, and let us see how this particular method of treatment fits in with those problems.

Slime Control

Any problem of slime or algae that may have been encountered in a once-through usage of the same raw water is greatly magnified when we put this water into a cooling tower system and hold it there for an extended period of time. Organisms have an opportunity to grow and unless prevented they will do so and cause trouble.

Various data have been published indicating that chlorine is much more effective at the low pH range of 6.0 to 6.5 than it is in the alkaline pH range. This results not only in better control of slime or algae with chlorine, but also reduces the poundage of chlorine required for this purpose. In certain instances it may be desirable to use materials other than chlorine for slime or algae control. Here again the chlorinated phenol derivatives which are commonly used for this purpose are much more effective at the low pH values.

these steam traps won't freeze up!



This illustration of Yarway Traps shows how in New Mexico gas plants completely eliminated freeze-ups.

Freeze-ups of outdoor steam traps in winter weather often cause production delays. Don't take that chance . . . especially when it's so easy to install Yarways, the steam traps that won't freeze up.

They won't freeze because condensate does not accumulate. The only moving part—a little valve—is continually testing for condensate, discharging it as soon as it forms. There's never anything to freeze.

Other reasons why over 750,000 Yarway Impulse Steam Traps have been sold—they get equipment hotter, sooner; light weight; small size; easy to install and maintain; good for all pressures; made of stainless steel.

More than 200 industrial distributors sell Yarway Traps and Strainers. See your nearest one today. For name, and free 24-page Steam Trap Book, write . . .

YARNALL-WARING COMPANY

Home Office: 116 Mermoid Ave., Philadelphia 18, Pa.
Southern Representative: ROGER A. MARTIN, Bone Allen Building, Atlanta 3, Ga.



the steam trap designed
with more production in mind

Cooling Tower Problems*

Another problem confronting the operator of a cooling tower is the expected life of the cooling tower. The problem of delignification of cooling tower lumber has been investigated by cooling tower manufacturers. There are a number of factors, leading to delignification, the major factor being high sodium carbonate content in the water. High sodium carbonate content goes hand in hand with high pH. In extreme cases towers have been known to fail in 7 years due to delignification with pH values above 9.5 and accompanying sodium carbonate. The low pH of the method described has the advantage of safeguarding against delignification.

A new form of cooling tower lumber attack has been noted in the Gulf Coast area the past several years. This is a fungi attack and is a first cousin to the wood rot encountered in fence posts, lumber stored on the ground, etc. In the towers that have been infected, this type of attack has been very costly. Investigations are being conducted on the causes and remedies for this type of attack. Complete answers are not yet available. It is generally agreed that new redwood does contain natural inhibitors against this type of attack and that the wood is not vulnerable to fungi destruction until those natural inhibitors have been leached from the wood. Here again, operation at low pH value is indicated as a retardant against leaching of the redwood.

With the method of cooling tower water treatment described above, very adequate chemical concentrations can be maintained for a typical 100,000 kw plant at a daily cost of less than \$30.00.

We have covered the major water treatment problems of steam generating stations, and common solutions to these problems. Not all stations will conform to our typical station and may have unusual difficulties requiring individual diagnosis.

Through years of operating experience and laboratory research,

the boiler circuit water treatment has become almost standardized. The make-up water for this circuit must have low dissolved solids, must be clear, and must have no more than a trace of troublesome ions such as calcium, iron, etc.

The condenser water, whether circulating or recirculating, does not fit so clearly into a standard picture. It would be completely impractical to soften the 100,000 gpm to zero hardness or even to clarify

this much water. Because of the large volumes of water involved, we will always have lots of variation in water composition and therefore operating problems on this side of the condenser.

Right now the water treatment industry is in step with the newest power plant designs. When tomorrow's drawing boards produce new designs, we are confident that water treatment will again meet the challenge.

Heater Operation Aided By Thermal Insulation

IN pilot plant work, there is often a need for a high temperature heat source without the undesirable characteristics of direct gas-firing or electrical strip heating. To supply such a need at the Monsanto Chemical Company's Organic Chemicals Division, St. Louis, Mo., an electrically heated unit using an organic chemical liquid heat transfer medium, was constructed. Maximum design operating temperature for the unit was 572 F.

As shown by measurements of heat output before and after its application, heat insulation was a critical factor in the successful operation of the heater. The maximum temperature attainable with the uninsulated unit at no load was only 495 F. After insulation, the useful heat output was up to design figures, with the operating temperature reaching 572 F.

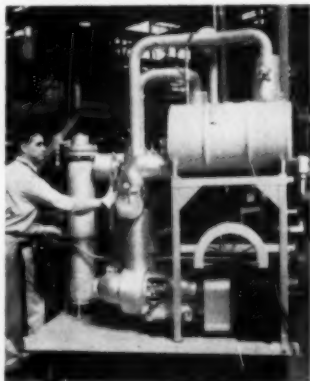
Unit Design

The unit included the following elements: A reservoir for the heat transfer liquid; a circulating pump; an electric oil immersion heater; a water-jacketed cooler; instrumentation to provide control of the fluid temperature; a buffer tank; and pipelines to be connected with the equipment to be heated. Since it was necessary to supply heat to any one of several pilot plant reactors, portability was a desired feature of the unit. As a result, it was mounted entirely on a four-wheeled truck with power received via extension cord; water for cooling, when required, is supplied by hoses.

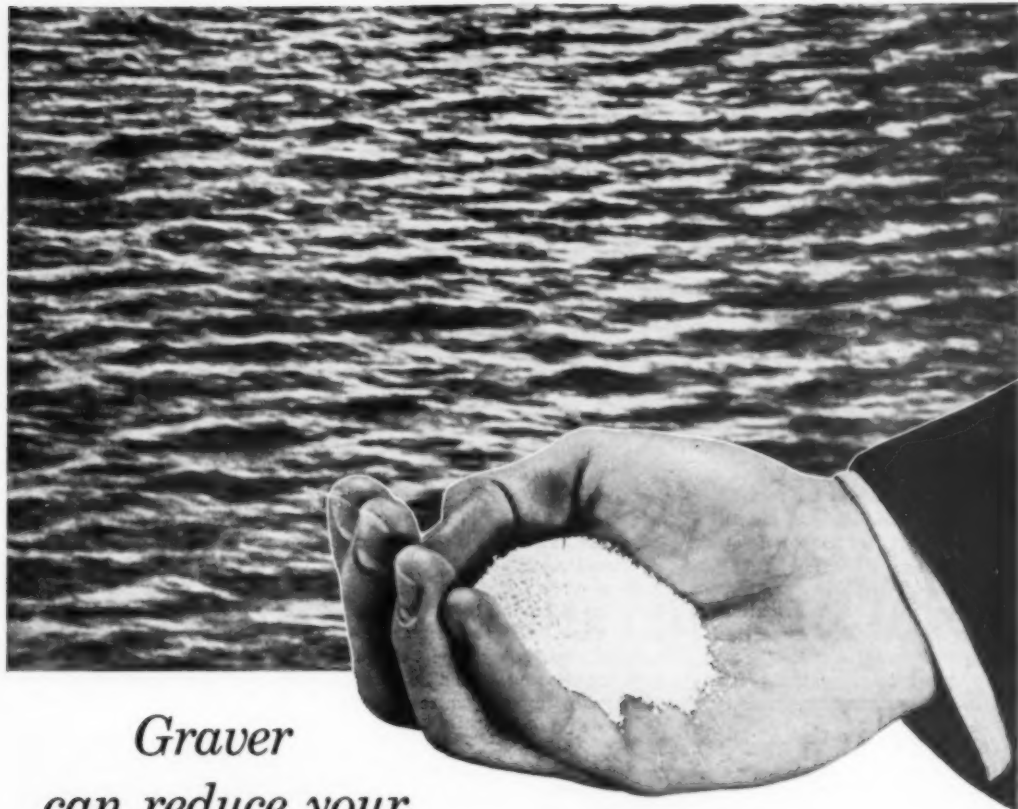
Liquid piping was arranged so that short lines could be run to and from the jacket of any desired reactor.

Despite the relatively small size and rather simple design of the unit, particular care was taken in the specification of insulation for the heated parts. The heat exchange fluid recirculating line, the supply and return lines, the lines to and from the pump, the cooler bypass line, and the line from the reservoir to the heater were insulated with 1-in. thick 85 per cent Magnesia pipe sections, wired in place, and finished with an 8-oz pasted canvas jacket. Sectional 85 per cent Magnesia, of the same thickness as the piping insulation, was cut to fit and wired on the flanges, and finished with asbestos cement. The storage drum was insulated in the same manner as the flanges, except that 1½-in. thick blocks were used.

Portable heater at the Monsanto Chemical Company's St. Louis, Mo. plant is insulated with 85 per cent Magnesia. Pipe insulation finished with canvas jacket; flange and storage drum with asbestos cement.



* An extensive discussion of cooling tower design and operating problems. "Symposium on Cooling Towers" was carried in SP&I for June, 1951, p. 65.



*Graver
can reduce your
water solids to*

**LESS THAN
a handful in a
million gallons**

That's equivalent to water with a purity of 0.1 ppm or 0.8 lb per million gallons . . . practically distilled water.

How does Graver do it? . . . with a MIXED-BED single tank demineralizing unit. Simple in operation, it can even be automatically controlled. Graver cation and anion exchange resins are mixed intimately, and simultaneously remove both cations and anions from the water being treated in this single unit. By combining certain Graver resins the silica in the water can also be reduced to 0.02 ppm and the carbon dioxide content can be reduced to zero.

Graver Demineralizers can accomplish these results in installations ranging in size from small laboratory units to huge plants in central power generating stations. The performance of each Graver installation is *guaranteed* . . . and this guarantee is based on Graver's 40 years of experience in designing successful water treating equipment of every type. Write for complete information.



GRAVER WATER CONDITIONING CO.

Division of Graver Tank & Mfg. Co., Inc.

216 WEST 14th ST., NEW YORK 11, N. Y. • CHICAGO • PHILADELPHIA • CLEVELAND



Helping the MAN-IN-THE-PLANT

Intake Screens Improved

ONE of the Southeastern utilities is located on a large tidal river from which it draws its water. Major trouble was sewage which emptied in above the plant and bark chips from paper mills upstream getting by the revolving screens and plugging condenser tubes. This resulted in excessive condenser cleaning, frequent turbine outages and decreased station efficiency. As the plant is located on tide-water with an average 8 ft tide, the trash, bark, chips, etc., pass the inlet to the traveling screens many times before washing out to sea.

To prevent the debris from reaching the traveling screens at

floating 16 x 16-in. spruce timber was placed between two I beams at inlet to traveling screens and an upright $\frac{1}{2}$ -in. mesh screen secured to the timber. A counterweight was fastened to the timber with a pulley and cable. As the tide rises and falls the timber follows and prevents most of the floating trash from entering inlet to traveling screens.

Trouble was also encountered with small pieces of trash clogging spray pipe holes (A-A in sketch B) used in cleaning the traveling screen trays. It was necessary to dismantle this spray pipe twice a week for cleaning. Condition was corrected by inserting an easily re-

movable strainer in pipe line between pump and spray pipe. Strainer is removed and cleaned twice a day after screens have been washed.

Check Insulation on Exposed Lines

IN preparation for approaching winter, all heated lines that are exposed to the weather should be checked to see that they are properly insulated and finished, advises *The Magnesia Insulation Manufacturers Association*. Otherwise winds, rains, etc., can cause outdoor lines to lose many times the amount of heat that would be lost by indoor piping. In addition to higher fuel costs, excessive heat losses in the case of hot water and condensate lines may result in freezing.

During the earlier part of the year the hot water system may have been extended to an adjoining building, or new steam or condensate lines may have been run outdoors. Check to make sure that all sections of new piping have been insulated.

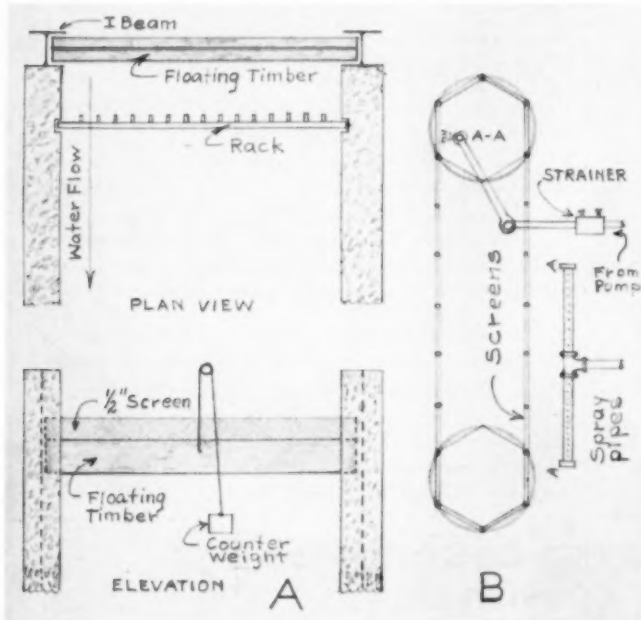
Outdoor lines should be insulated with $\frac{1}{2}$ -in. thicker insulation than would be used for indoor lines operating at the same temperature. This rule should also be followed for lines in open areas such as ramps, loading platforms, sidings, yards, etc. If the insulation thickness is found to be inadequate, additional insulation should be applied.

Is Insulation Protected?

Insulation on outdoor lines should be finished with asphalt saturated asbestos roofing felt. Insulation on flanges, fittings and valves should be finished with asphaltic plastic weatherproofing.

Weather-resistant jackets should be inspected for holes, torn and loose laps, loose or broken wiring, and any other deterioration. Any needed repairs should be made promptly. In the case of weather-resistant plastic finish on flanges, fittings and valves, any cracks or dents should be sealed with fresh plastic weatherproofing. No insulation can retain its heat-saving ability if it becomes waterlogged.

Through the use of a floating timber at circulating water tunnel inlet and a small water strainer on revolving screen wash pump, this Southeastern utility decreased condenser cleaning and increased station efficiency.





They unload 2000 tons an hour!

**B & O giant unloaders first
to use new G-E product**



G-E pumpless rectifiers give lower cost d-c power than conventional pumped rectifiers because vacuum pumping system is eliminated. This means no vacuum headers, indicators or connections and no condensation pump.



PUMPLESS RECTIFIERS

The new Baltimore and Ohio ore facility at Baltimore reduces turn-around time for ore boats and speeds strategic iron ore on its way to the nation's steel-producing centers.

Mercury Arc Rectifiers coupled with adjustable d-c drives are important factors in the highly efficient unloading cycle. Two 1000 kw G-E *pumpless* rectifiers supply the d-c power.

These new G-E *pumpless* rectifiers give continuous low-cost service because they incorporate the latest improvements in design. Vacuum pumps usually required for rectifiers of this great a capacity are eliminated. So are the pumping losses and the water formerly needed to cool the vacuum pumps. All parts are easily accessible for periodic inspection, and any tank can be replaced by a stand-by spare, if necessary.

For information about modern *pumpless*-rectifier conversion to fit your d-c power needs, call or write your nearest G-E sales representative. General Electric Co., Schenectady 5, New York.

GENERAL



ELECTRIC

3245
9

Board Locates Trouble in a Hurry

TEXAS Engineering and Manufacturing Co., Dallas, Texas, is one of the country's largest subcontractors of airframes. Having been built during the last war for North American Aviation, the plant and its electrical layout are modern, but its size makes it complicated. The plant not only covers a wide area, but during the past few months expansion of production facilities has been rapid.

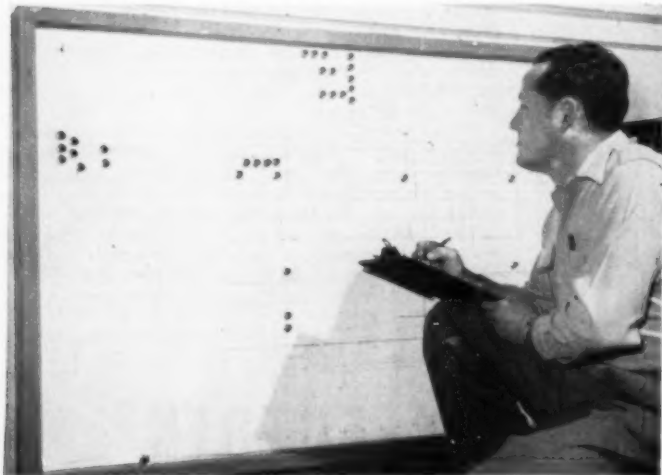
Keeping up with the electrical distribution layout is a real job, and when something goes wrong on one of the heavier electrical loads, tracing the trouble would be quite difficult except for a helpful control panel installed in the maintenance foreman's office. This panel is laid out as a plan view of the main distribution lines to and from the load center transformers. A small red light is fixed on the board at the location of each of the electrical production units pulling a heavy load. There is a light for each high frequency generator, each compressor, each plating and anodizing unit, each

metal melting pot, and every other item using a lot of current. Green lights are used to represent the load centers, themselves.

These small panel board lights are tied into the actual equipment with relays, and current for the lights is carried over multiple communications type wiring. Originally 12 volts had been used, but it was found that transmission losses over the long distances involved were too great, so the voltage has been stepped up to 24 v.

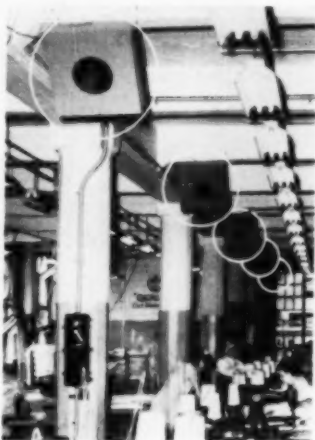
Panel board lights stay lit, in view of the maintenance foreman seated at his desk, so long as the equipment they represent is operating properly electrically. Whenever a piece of equipment is cut off or goes off for some other reason, its light on the panel board goes off, and the maintenance foreman can observe the change. Not only does this tell him when there is trouble at any machine or group of machines, but he can also tell when one of the machines has been left on during a shift when it is not scheduled.

The panel is of most assistance to maintenance superintendent C. G. Housewright in locating the area of trouble quickly in the event of an electrical breakdown. If only one light, representing one piece of equipment, goes off, he knows that the trouble is local. If two or three go off together, this tells him that his trouble is in a line feeding that group. Looking at his panel diagram, he can spot the lead in which the trouble is probably located and send a crew to handle repairs.



Work Music by Muzak

SINCE August, 1948, the New Orleans plant of the Bemis Bro. Bag Company has subscribed to the functionally designed industrial music programs of Muzak. Originally installed on a trial basis, employee response in terms of higher efficiency and bet-



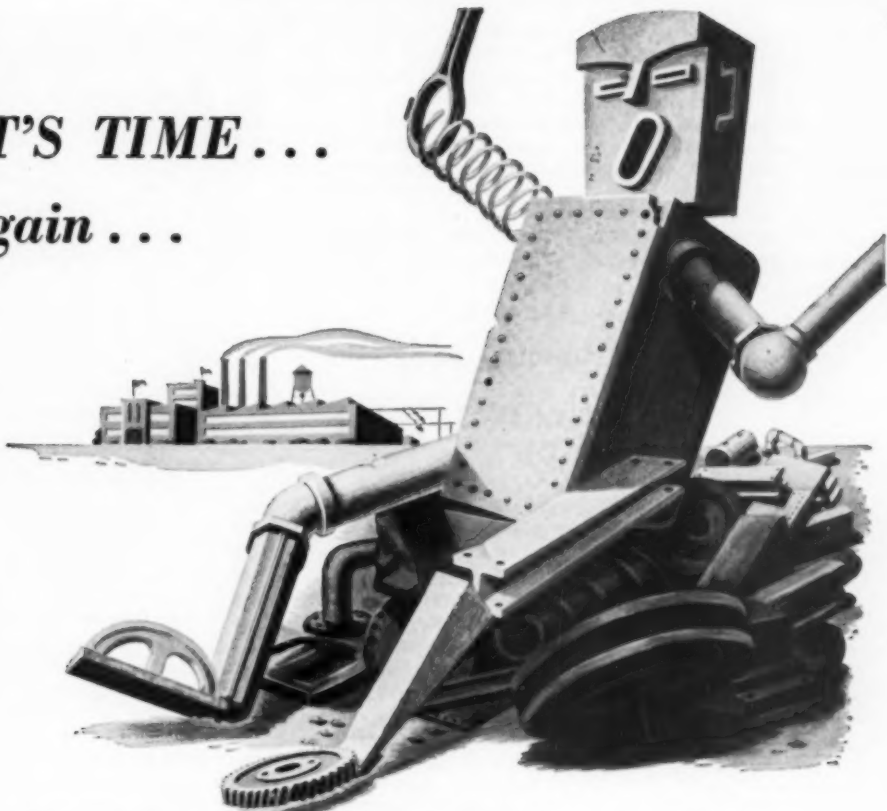
A section of the work area at Bemis Bro. Bag Company factory in New Orleans shows Muzak loudspeakers suspended from ceiling beams. Speakers are angled for directional flow of music to penetrate work noises at low volume level. An overwhelming majority of the workers, 98.1 and 96 per cent respectively state Muzak gives them a "lift" and relieves fatigue.

ter morale was so favorable that Music by Muzak now services all production areas and the cafeteria. The installation uses 38 speakers and one amplifier with a microphone incorporated into the system for plant-wide paging and communication purposes.

The nature of the work performed is repetitious, consisting mainly of stitching operations providing little variety and considerable boredom. As many investigations in this field have already pointed out, monotonous work procedures accelerate industrial fatigue, thus undermining morale and efficiency.

A just-completed questionnaire of Bemis employees reveals that Muzak's industrial programs, after three years of uninterrupted opera-

IT'S TIME...
again...



TO WAKE UP SCRAPPY!

Scrap's getting scarce again . . . compared to the amounts we need . . . and it's up to *all* of us to *help* produce enough steel.

107,000,000 tons of steel is the present rate of production in 1951 . . . 119,500,000 tons is expected in 1952.

Last year, 1950, we produced 97,800,000 tons.

All that extra steel—enough to take care of both military and civilian needs—calls for *more scrap iron and steel*.

Scrap Inventories Are Alarming Low

While steel mills are producing at a greater rate than ever, scrap inventories have dwindled. Many mills are operating on a hand-to-mouth basis with shut-downs

threatened unless we furnish more scrap.

We *do* have the scrap. It's everywhere, not just in the form of *production* scrap—the “leavings” of machining, normally turned over to scrap dealers . . . but also in the form of *idle* metal: obsolete machines and tools, no-longer-usable jigs and fixtures, gears, chains, pulleys, valves, pipe, abandoned steel structures, etc.

We must have this *idle* metal to keep the furnaces running.

Please cooperate. Set up a Scrap Salvage Program in your plant—*now*. For a complete plan on “how to do it”, write for booklet “Top Management: Your Program for Emergency Scrap Recovery”. Address Advertising Council, 25 W. 45 Street, New York 19, N. Y.

Why Do We Need Scrap?

Steel is made half from pig iron, half from scrap. With production on the increase, more scrap must be purchased. And it's up to you to “dig it out” and sell it.

NON-FERROUS SCRAP IS NEEDED, TOO!

This advertisement is a contribution, in the national interest, by

SOUTHERN POWER AND INDUSTRY



tion, are continuing to maintain their fundamental effectiveness. The findings of this survey validated the fact that music, when properly planned and administered, has a salutary effect on employees that does not diminish nor deteriorate with time.

The plant manager reports that: "There is a different atmosphere in our work room now. Employees

appear more cheerful and interrupt their work much less frequently to talk to their neighbors. With almost no exception our workers enjoy the music and many have made unsolicited comments about how much benefit they find they are getting from it."

Three of the four supervisors of the 52 employees surveyed report that Muzak has resulted in im-

proved inter-employee relations and employee-supervisor relations. All supervisors report better employee attitudes toward their jobs.

Work music by Muzak represents not only an improvement in working environment, but it also presents to management a versatile production tool having the unusual ability to produce both subjective and objective benefits.

Making Use of Obsolete Equipment

By A. BUSH ENOS

Industrial Engineer
Richmond, Va.

PRODUCTION gangs working under incentives sometimes labor under difficulty due to the lack of material handling equipment necessary to move aside or position work in process. This same condition can hamper any productive effort, of course; but working against a predetermined standard, such as an incentive bonus arrangement, points up the importance of moving a product within definitely stated time limits.

Problem

A case of this kind recently occurred in an Eastern Virginia meat packing plant when the introduction of a new curing process radically shortened the curing period for one brand of bacon. In the old process, curing was a matter of holding the meat under cer-

tain conditions for a period of days or weeks. Therefore, while a schedule for "take up" and "hang in smoke" was maintained, it did not compare with the few short hours and fast moving schedule of the new process.

Previously, there had been ample time before the "in-smoke" date to get up the trucks and buggies needed to transport from curing boxes to smokehouses. However, under the new conditions, cured bacon was frequently ready to go from curing cellar to smokehouse in the same trucks which brought it from the cutting floor (where fresh meat originates). Because the trucks which brought meat from the cutting floor were needed there again for the following morning's "cut" a problem was created. It became evident that rolling stock

belonging to another department could not be held over for a re-use in the curing cellar.

Coincident with this development, another problem arose. The new process had made obsolete certain metal curing-boxes, which were now taking up badly needed cooler space.

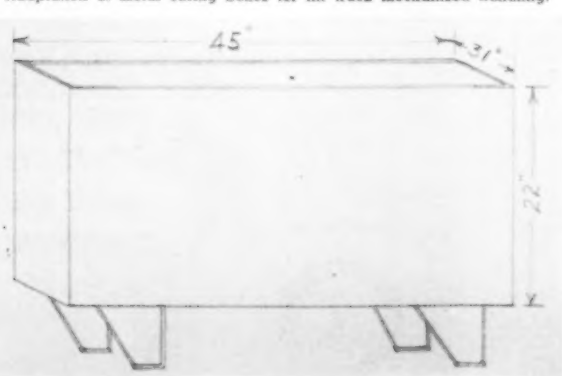
Solution

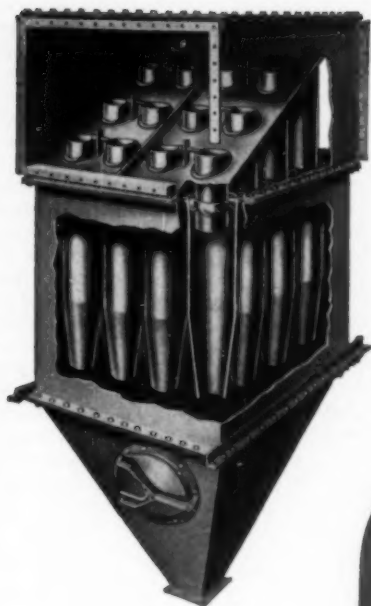
It was obvious that these boxes could not be used in the new process in their existing condition because they could not be lifted and moved with available curing-floor equipment. But the maintenance engineer thought they could be adapted for use with the existing handling equipment, which consisted of portable hydraulic jacks and hand operated lift trucks. Since the box bottoms rested flush with the floor, the problem was to find a means whereby they might be picked up by a jack or truck, a type of equipment which has to be rolled underneath the object to be moved or handled.

The engineer's solution was a simple one. He attached skids, or legs, to the four corners of each box. The skids were made by bending to shape lengths of $\frac{1}{2}$ " x $2\frac{1}{2}$ " flat bars, which were then welded to the bottom, raising the box about 9-in. from the floor. The result was a "skid-box," high enough from the floor so that a lift truck could be rolled under it, raise it up, and carry it from processing machine to storage position, and from storage to smokehouse!

Now, trucks received with meat in them could be returned immediately to the floor which sent them. As soon as a skid-box was set down in storage position, the truck that handled it also was released for other floor duties until the product was ready to move again.

Adaptation of metal curing boxes for lift truck mechanized handling.





In dust and
fly ash recovery

MULTICLONE COLLECTORS

and only Multiclones
give vital advantages
like these...



Long and
narrow



Square

Uniformly High Recovery:

MULTICLONE's multiple small diameter tubes—made possible by its exclusive vane design—whirl the dirty gases with greater centrifugal force, thus throwing out not only the large, medium and small particles, but also a high percentage of the extremely small particles of 10 microns and less. This, coupled with the fact that there are no pads or filters to become choked with recovered material, results in a more complete recovery of all suspended materials from the gas stream.

Maximum Adaptability:

In addition to its unusual compactness, the MULTICLONE is also unusually adaptable to various installation requirements. Where head room is low it can be installed with side-inlet side-outlet connections. Where side clearances are restricted, it can be installed with side-inlet top-outlet connections. In addition, without changing capacities, the shape of the unit can be varied—long and narrow, short and wide, or square—to fit restricted spaces... and its single-inlet single-outlet duct requirements permit greater flexibility and simpler installation. These savings slice installation costs, space requirements and insulating expense.

Space-Saving Compactness:

Plant space costs money—so be sure to check space requirements carefully. As shown in the accompanying chart, the MULTICLONE requires less floor space and less cubic space than any other unit of comparable capacity and performance. Translate these savings into today's high costs for plant space and you readily see the great importance of this one MULTICLONE advantage alone!

Model	Space Requirements In Sq. Ft. In Cu. Ft.	
	Relative	Relative
Multiclone	1.0	1.0
Collector A	2.1	1.8
Collector B	5.9	3.2
Collector C	6.8	3.9

Minimum Maintenance:

The MULTICLONE has no high speed moving parts to repair or replace... no pads or filters to clean or renew... nothing to choke the gas flow or increase draft losses as suspended materials are recovered. MULTICLONE draft losses remain uniformly low at all times. Further, the recovered material from an entire bank of tubes is collected in a single hopper—far easier to service and maintain than the multiple hoppers of conventional cyclone units.



FREE INFORMATIVE BOOKLET

This 32 page booklet outlines the basic principles of centrifugal dust recovery and shows the many ways MULTICLONE advantages assure higher recovery at lower overall costs. A free copy of this booklet will gladly be sent on request. Write today!

Before you decide on any recovery equipment be sure to get complete information on MULTICLONE advantages. A letter, wire or phone call to our nearest office places this information in your hands without obligation. Get all the facts and you will get MULTICLONE Collectors!

WESTERN Precipitation CORPORATION

ENGINEERS, DESIGNERS & MANUFACTURERS OF EQUIPMENT FOR
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PRECIPITATION CO. OF CANADA, LTD., DOMINION SQ. BLDG., MONTREAL

Selection and Care of the Screwdriver

FAILURE to select the screwdriver for the specific task causes ruin of the tool and may result in serious accidents. If one will consider the relatively low cost of really high quality tools it is indeed false economy to purchase inferior grades to save a few cents.

Shop Work

Six models of screwdrivers which will adequately meet most needs for general shop work include: (1) a 6-in. blade, heavy duty, square shank type; (2) an 8-in. blade, medium-duty, round shank, standard blade type; (3) a 4-in. blade, medium-duty, round shank type with standard blade; (4) a 1-in. blade, medium-duty, standard blade, close quarters type; (5) a 12-in. blade, light duty, electrician's type; and (6) a 2-in. blade, pocket type. In addition it is convenient to have a ratchet or offset screwdriver, and an instrument screwdriver with a shank $1\frac{1}{2}$ in. long and a blade $\frac{1}{4}$ in. wide.

Screwdriver handles are made of

a variety of materials by many different manufacturers, and are fastened by several methods as indicated in the illustration. The "competition grade" found on the dime store counter, and in all too many hardware stores as well, has a wooden handle fastened to the shank by a rivet and definitely will not withstand rough usage. The better quality handles are pressed over splines or grooves in the shank.

Caution must be exercised in the use of plastic or composition handles since exposure to heat may cause warping, and contact with heated objects, such as a soldering iron, may cause an energetic fire. Plastic handles may also be spalled off or split by hammer blows, although they are tougher than wood in most other respects.

Electrical Work

When buying screwdrivers for the electrical trade caution should be used in selecting types that will increase the safety of the workman

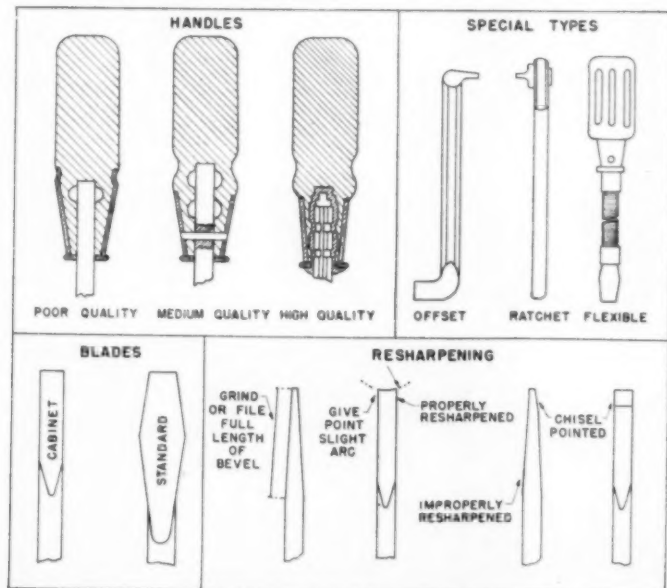
through good insulation values in the tool. Some jobs must be handled "hot." For them the best, fully insulated screwdriver is none too good. The use of through shank, or the riveted ferrule type, is extremely dangerous when used as such. Adding tape to the shank and handles is only a makeshift procedure that can lead to a fatality. While it is admitted that the modern plastic tapes are far superior to the old plain rubber and friction types, their use on tools for electrical resistance is evidence of poor judgment and bad technique.

It is a bit discouraging to note the number of mechanics who still fail to do a good job of resharpening a screwdriver. The blade must be ground (or filed) flat across the full tip to produce a clean edge that will fit well in the screw slot and grip its sides well as the blade is turned. The corners must be squared and the tip must be filed or ground equally over the entire area of metal to produce a symmetrical blade. The "knife-edged" type of sharpening, so frequently seen, will produce a tool that slips out of the slot to hurt the user and ruin the screw head.

Listed here are several essential rules that should be observed:

1. For electrical work use only screwdrivers with insulated handles and shanks.
2. Refrain from using the screwdriver as a pinch bar, drill, or chisel.
3. If the point is rounded off, chipped or broken, grind it true as indicated in the diagram.
4. Use the proper size screwdriver to prevent slipping from the screw slot, or forcing it.
5. While some jobs do warrant the use of a wrench in combination with the screwdriver to start a tight screw, the use of jaw grip tools on round shanks can be ruinous to a good tool. Square shanks in combination with spanner or adjustable wrenches work better.
6. The best screwdrivers won't work well in mutilated screw slots. Square up the edges of the slot, clean out the rust and dirt, and use some brand of thread loosening oil to break the grip of rust and paint.—Paul C. Ziemke, Oak Ridge, Tenn.

Screwdriver details showing handle construction, blade types, special design and proper method of resharpening.



*Today you need
a packing
that lasts longer*



HERE
IT IS

Now, when you must meet tight production schedules, you'll need GARLOCK *Lattice-Braid* to help you avoid frequent shut-downs for re-packing—for *Lattice-Braid* is designed for long, continuous service.

All the strands of *Lattice-Braid* packing are lattice-linked together into a structural unit which holds together, even when the packing is worn far beyond the limits of wear of ordinary braided packings.

GARLOCK *Lattice-Braid* is supplied in several styles listed at the right. Write for folder today.

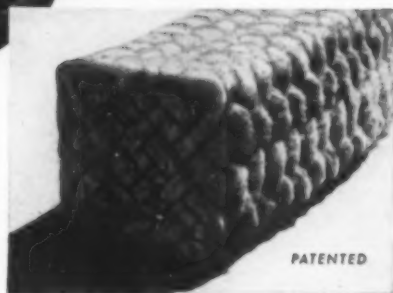


THE GARLOCK PACKING COMPANY
PALMYRA, NEW YORK

In Canada: The Garlock Packing Company
of Canada Ltd., Toronto, Ont.

GARLOCK

Lattice-Braid
PACKING



ASBESTOS

GARLOCK 730—for hot or cold water at medium to high pressures.

GARLOCK 731—for steam, gases or water at temperatures up to 700°F.

GARLOCK 732 (wire inserted)—for heavy duty service against steam, oil, gases or water at temperatures up to 700°F.

GARLOCK 733—for hot or cold water or alcohol at medium or low pressures.

GARLOCK 734—for cold gasoline, kerosene and light oils.

GARLOCK 736 (blue asbestos)—for concentrated mineral acids.

FLAX

GARLOCK 740—for cold water at medium or low pressures.

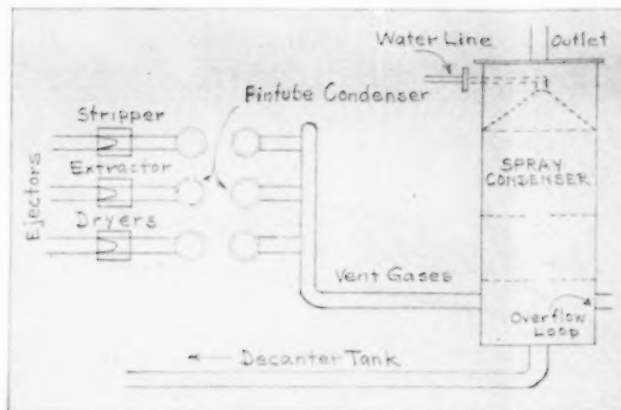
GARLOCK 745—for heavy hydraulic service against cold water.

COTTON

GARLOCK 751—for hot or cold water.

TEFLON

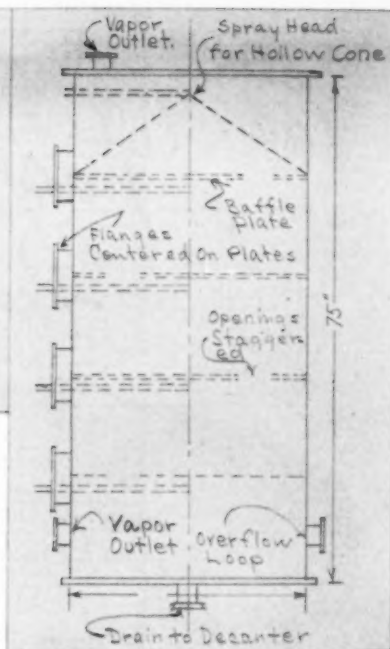
GARLOCK 5733—for all acids, all alkali solutions and all organic solvents.



Solvent Condenser Improved

THE accompanying sketch shows a new spray condenser recently designed and installed in the solvent extraction plant of Osceola Products Company at Osceola, Arkansas. The extractor, stripping column, and dryers are under vacuum. This vacuum is maintained by steam ejectors, which in turn pull off some solvent vapors. Naturally these gases must be condensed back to liquid to reclaim as much solvent as possible. The sketch at left shows the original set-up as furnished by the manufacturer. There is a terrific velocity rushing through the single spray condenser.

By installing additional plates and sprays and staggering the holes in the baffles as shown in the sketch at right it was possible to retard the flow of hexane



saturated steam through the condenser, and the extra sprays do a much better job of condensing.

Since adding this type of condenser, solvent loss has been cut one gallon per ton, which amounts to about \$30.00 per day.—O. M. Beckham, Solvent Plant Superintendent.

Drives Handle Shock Loads

THREE successful UNI-PULL drive installations at the Ralph Anderson Lumber Company, hard-

wood lumber manufacturer of New Madrid, Missouri, demonstrate that UNI-PULL can take shock

loads. The tension-controlling motor base gives the unit extra capacity for this type of drive.

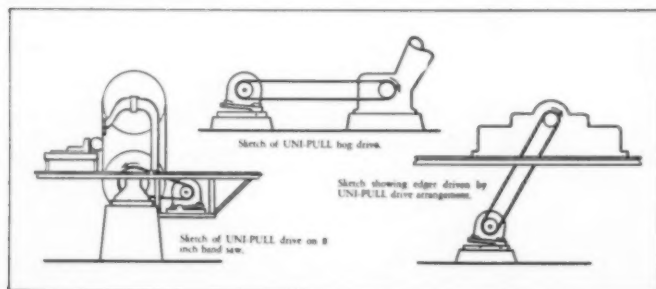
Drive Data

The motor on the band mill drive is rated at 100 hp. Fibre driver pulley on the motor is 21-in. in diameter and the driven cast iron pulley is 26 in. in diameter. Center distance between pulleys is 72 in. The drive operates on an angle of approximately 45° upward. It is estimated that in operation there is a momentary overload of 100 per cent.

Edger Drive

The edger is located on the floor above that where the motor is placed. It is driven by a 60 hp motor fitted with a 12-in. diameter pulley. The driven pulley on the

Three UNI-PULL installations at the Ralph Anderson Lumber Company of New Madrid, Missouri.



edger is 14 in. in diameter. Center distance between pulleys is approximately 120 in. This machine has a series of saws instantly adjustable for different widths of lumber and in operation its drive encounters sudden heavy shock.

Hog Drive

Drive on the hog is horizontal and uses a 60 hp motor. Driver pulley is 12 in. diameter x 12½ in. wide. The driven pulley on the machine is 14 in. x 12½ in. and the distance between centers approximately 120 in.

Ceramic Kiln Recorder

AMONG the principal products of Carolina Ceramics at Columbia, South Carolina, are fire brick, flue lining manufactured from Kaolin and drain tile from shale. Company uses five 32 ft down-draft kilns, coal fired by hand.

It is very difficult to drive out the last traces of moisture from Kaolin because it has an unusually high content of chemically combined water. This makes it necessary to keep close supervision over the firing rate of the kilns.

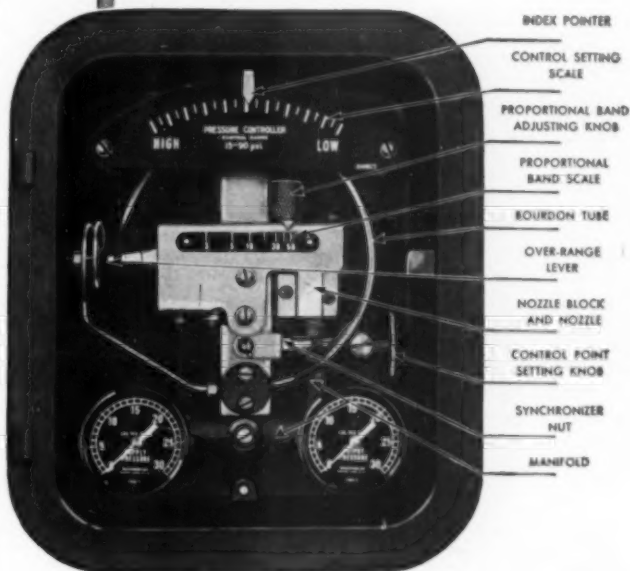
Use of a four point recorder was prohibited on this application, so engineers installed a Capacilog single point strip chart recorder with a six point thermocouple selector switch. The scale and chart



Wheelco Capacilog recorder and 6 point switch used to chart kiln temperatures at Carolina Ceramics, Inc., Columbia, South Carolina.

MASONEILAN MODEL 2700 PRESSURE CONTROLLER

*Offers Accurate Proportional Control...
Precise Response...
Ease of Adjustment...*



...YET IS MODERATELY PRICED

Masoneilan No. 2700 Pressure Controllers are especially designed for applications requiring accurate control when expensive instruments are not warranted. The pneumatic feedback, usually found only in more elaborate proportional controllers, assures precise response. The Control point setting mechanism provides accuracy of adjustment and easily read expanded index scale. Control action is reversible with either bourdon or bellows. The controllers are furnished in two case styles: a universal case for panel mounting; and a specially designed case for valve or wall surface mounting.

Applications include — pump governors, steam pressure reducing stations, gas well pressure reduction, and many others requiring small to intermediate proportional band.



MASON-NEILAN REGULATOR COMPANY

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range of the instrument is 0-3000 F and operating temperatures vary from room to a maximum of 2400 F.

It is essential that the last trace of water be removed from a kiln prior to its being brought up to 212 F in order to protect against possible damage to the ware. At the standard firing rate, the re-

corder charts temperatures around 200 F until the kiln is dry, at which time the temperature record increases a few degrees per hour. The firing rate for water-smoking is continued as a special precaution up to 300 F, at which time the kiln is ready to raise the heat at the rate of 300 F per eight hour shift until it

reaches temperatures of from 2350 F-2400 F. This rate is maintained until the number 8 temperature cone recedes.

By using the single point recorder, a considerable saving was made in the original investment and the Capacilog should also cost less to maintain, due to its extreme simplicity.

Reclamation of Water for Reuse

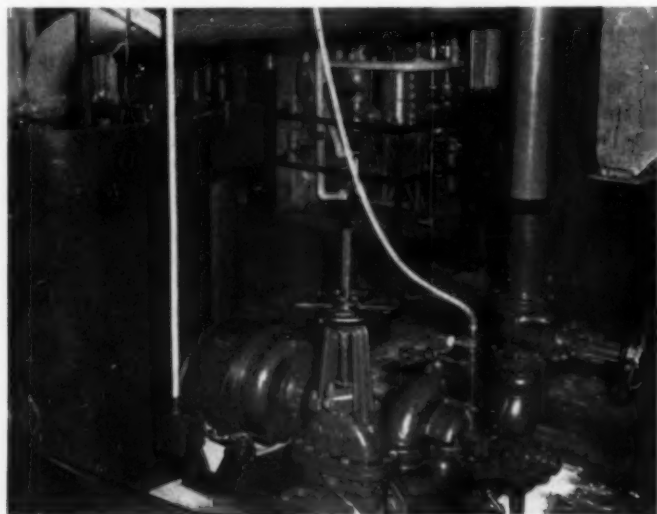
Do you have a water shortage? Recovery of uncontaminated fresh water before it reaches the sewer can be a valuable source of supplemental supply.

IN many power and industrial plants the available fresh water is often in critical supply. For this reason every plant operator often finds it necessary to survey the situation and affect as many economies as possible to keep his plant operating with the existing supply.

The original water supply sys-

tem for any plant is designed after engineering studies determine how to deliver the cheapest water. Consideration for the development of new sources of water supply often are attended by considerably greater financial outlays than those expended for that amount presently being used.

In the operation of a 40,000 kw Texas power plant, approximately 800 gpm of water is collected from such sources and returned as make-up to the cooling towers. Where water is potentially available for recovery, it is estimated that equipment of this kind can be installed for no more than \$10,000 per 1,000 gpm.



There is an instance of an original water supply being developed for a Southwestern paper mill at a cost of \$50,000 for each 1,000 gpm delivered to the plant. When it was expanded, the cost ran as high as \$175,000 per 1,000 gpm, and recent estimates indicate that further expansion would cost \$265,000 per 1,000 gpm developed.

It is always advantageous to consider the quality of water requirement for any one operation, and if the requirement is low, then a water of lower quality may be employed. This water may possibly be picked up from a sewer and used as is, or treated in some manner to give it the desired quality. It may be necessary to apply sedimentation, filtration, chemical treatment, or cooling to produce a suitable water for reuse by this method.

Exclusive of the above consideration, a very valuable source of supplemental water supply is often overlooked by an operator in his failure to collect and recover small amounts of uncontaminated fresh water before it reaches the sewer. In general, the larger quantities of process water used in condensers, heat exchangers, and such, are in some manner used within the process. Small amounts of fresh water that are often overlooked are used on fan bearings, pump bearings, jet condensers on turbine seals, and cooling water from air compressors. How recovery of such uncontaminated fresh water was accomplished in a Southwestern paper mill is illustrated.

Other Sources

Many plants, and paper mills in particular, operate vacuum pumps that require fresh water seals. Water reclaimed from this source is relatively pure and can be used

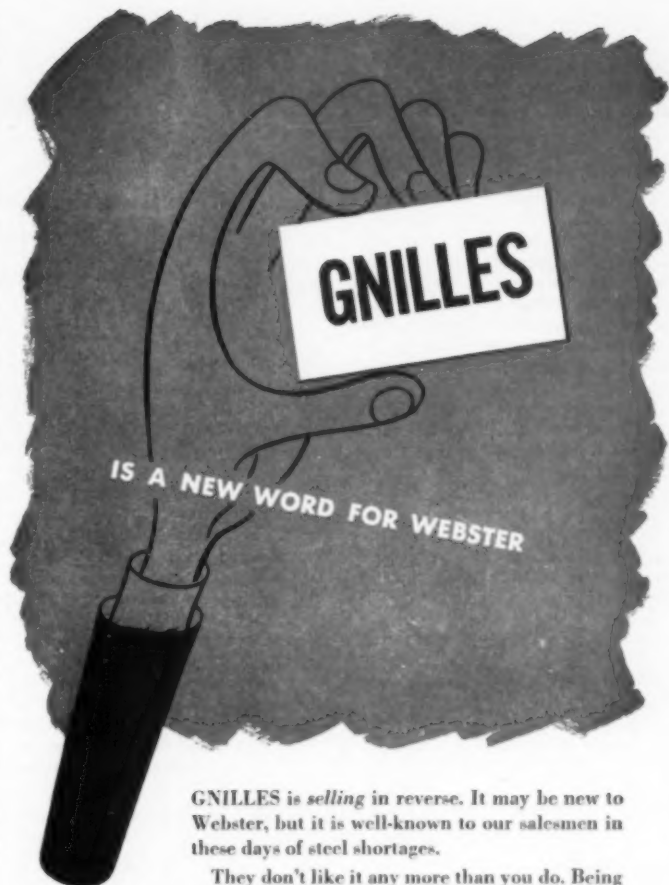
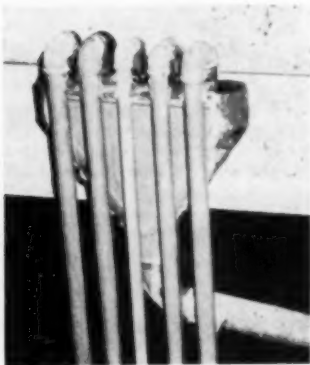
in many places in the mill just as it is collected. In some operations water may be collected from water cooled reel drums, brake drums, and heat exchangers on condensate systems. In any case where the elevated water temperature is to a disadvantage, these waters can be used as make-up in the cooling towers, but generally, the water is uncontaminated and the temperature elevations are so minor that it can be returned to the fresh water system.

In areas where ground water is in short supply, the federal and local regulatory agencies are entering the picture to require that full utilization of all fresh water be employed by consumers in that area. They often require that water with elevated temperature from process use be cooled and re-used in the process.

When the water supply is short, it is always necessary to throttle the amount of water used as coolant on bearings and such in the mill. With a recovery system in operation, an excess amount of water supply can be used for optimum efficiency in each application without fear of overtaxing the total water supply.

From individual discharges (cooling water for air compressors, pump bearings, etc.) water can be piped under pressure to central collecting points on the operating floor level.

From collecting points it can flow by gravity into a small receiving tank equipped with an overflow line to the sewer. Pump can be located at the base of the tank in order that its suction will be supplied with a constant head. In continuous plant operation a valve on the discharge of the pump can be throttled to maintain a relatively constant level in the receiving tank.



GNILLES is selling in reverse. It may be new to Webster, but it is well-known to our salesmen in these days of steel shortages.

They don't like it any more than you do. Being salesmen, it goes against the grain. They'd much rather be out there selling.

But today, that's out. So they are devoting their time trying to keep customers satisfied; helping them to arrive at suitable substitute steels; advising them on availabilities; keeping up with latest government regulations; helping make allocations on a fair and equitable basis.

They are anxious to help you in any way they can, so feel free to call on them and us.



Our Warehouse Division is guided by the same business principles which have carried Atlantic Steel Company through fifty years of progress.



NEW EQUIPMENT for Southern Industry

New Piston Ring Design

M-1 THE SAFETY SEAL PISTON RING COMPANY, Box 106, Fort Worth 1, Texas announce production of a new Safety Seal ring, an improved single-piece sealing ring capable of handling present day requirements of higher compression and firing pressures in the latest type internal combustion engines.

The sealing member is so designed that outward pressure against the cylinder wall is controlled in such a way that excessive pressures are avoided. With correct and uniform ring-to-cylinder wall pressure maintained at every point around the diameter of the ring, the possibility of scoring and uneven wear on the cylinder liner is thus eliminated.

In the Safety Seal ring the sealing member is permanently bonded to the main body of the ring throughout the entire area of contact, instead of only at the base. This prevents vibration of the sealing member, and eliminates the danger of its working loose from the bond and falling into the cylinder.

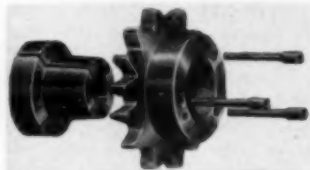
Free additional information is available to readers of Southern Power & Industry. Check item number on the postage free service coupon post card—page 17.

Interchangeable Hub Sprocket

M-2 FORT WORTH STEEL AND MACHINERY COMPANY, Fort Worth, Texas, has developed a sprocket to fit their "QD" V-belt sheave hub without reboring on sprockets as well as V-sheaves.

The new sprocket is taper-bored to receive the tapered hub. Bolts are provided to pull the sprocket onto the tapered split hub for a tapered drive assembly and a positive press fit on the shaft. Tapped holes in the sprocket permit the use of pull-up bolts as jack screws to break the tapered fit when dismantling the sprocket. Set screw over the keyway holds key in position.

According to the manufacturer, speed changes are greatly simplified



Interchangeable hub sprocket of Fort Worth Steel and Machinery Co. reduces maintenance and "break down" time.

at a savings in price; the new sprocket cuts cost of replacement on worn sprockets and reduces cost of spare sprockets; and maintenance and break down time is reduced.

These sprockets are stocked at the factory in $\frac{1}{4}$ -in. through $1\frac{1}{4}$ -in. pitch.

Load Inverter

M-3 BAKER INDUSTRIAL TRUCK DIVISION of THE BAKER-RAULANG COMPANY, 1250 West 80th St., Cleveland 2, Ohio, has announced a new load inverter attach-

ment, originally developed for use in the dairy foods industry, but adaptable to any operation that requires the regular inverting of palletized loads.

The attachment is designed to provide a method of inverting unit loads quickly, without taking them from

their pallets, as in the case of products which must be inverted to interrupt natural settling action.

The attachment consists of a revolving head and a set of top and bottom forks, with a plywood backstop and a side retaining board. To invert a load, the operator moves his truck in with the attachment positioned so that the plywood retainer is in a vertical position. An empty pallet is carried on the top forks of the attachment. After lifting the load out of its storage spot, the operator turns the load 180 degrees, using the revolving head. As the load revolves, it is kept in position by the retaining board until it has made the turn. When it has completed the turn, the inverted load shifts to the empty pallet and is put back in storage.

The attachment can be quickly installed on any of the company's 3000 lb or 4000 lb capacity fork trucks.



Baker attachment will invert unit loads quickly, without taking them from their pallets.

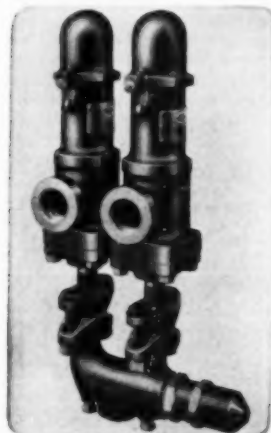
Patent
Pending



Now!

A New Safety Valve, Built on a Better Principle

This improved equipment has the seat and moving parts of stainless steel; no danger of rusting fast! The parts are self-aligning and accurately made. The opening is full, giving the valve much greater capacity than earlier types.



Dual-outlet Valve Permits Re-seating and Testing Safety Valves While Refrigerating Plant is Operating

The new valve can be re-seated after it opens. It meets the requirements of the latest A.S.M.E. and A.S.A. B-9 Codes. Built in $\frac{1}{2}$ ", $\frac{3}{4}$ ", 1" and $1\frac{1}{4}$ " sizes.

Sensitive, dependable, and safe, this valve will give your refrigerating system the adequate protection you need.

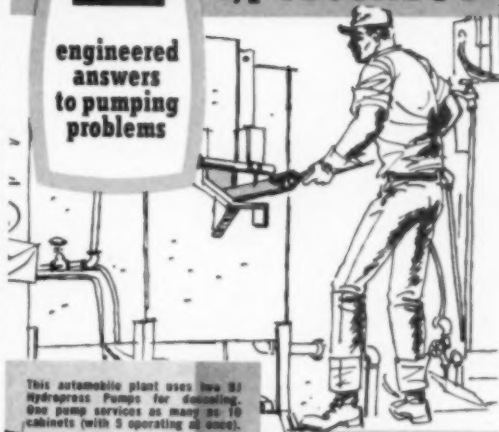
Order today from your nearest Frick Branch or Distributor, or direct from

DEPENDABLE REFRIGERATION SINCE 1882
FRICK Co.
WAYNESBORO, PENNA. U.S.A.

Also Builders of Power Farming and Sawmill Machinery

KNOCKS OFF SCALE IN 1½ SECONDS!

BJ
engineered
answers
to pumping
problems



This automobile plant uses two BJ Hydropress Pumps for Descaling. One pump services as many as 10 cabinets (with 5 operating at once).



**Auto industry uses
BJ Hydropress
Pumps to descale
forged parts
hydraulically!**

Manual or mechanical descaling operations are time-taking and profit-robbing. Especially when a product requires several descalings during production. You'll save time, money and rejects by descaling hydraulically with BJ Hydropress pumps.

Here's one of the many examples of modern hydraulic descaling as used by the automotive industry. During the heating of axle bars prior to forming, scale is created and must be removed. This is done in a hydraulic descaling cabinet. As the bar is inserted, a lever is tripped and high velocity water at 1500 to 2000 psi hits the bar from 3 to 5 nozzles. Scale is removed in 1½ seconds! Afterwards the hot bar is placed on a forming roll.

The BJ Hydropress pump is ideal for this type of work because of its unique construction features. It does not require relief valves, accumulators or extra heavy fittings and piping. Its double volute design creates inherent balance at all heads and capacities. Its vertical construction allows the use of a simple foundation and a minimum of floor space.

For more information call your local BJ sales engineering office or write

Byron Jackson Co.

P. O. Box 2017, Terminal Annex, Los Angeles 54, California
Sales Offices in Principal Cities

new equipment (continued)

For more data circle item code number on the postage free post card—p. 17

V-Belt Sheave

M-4 V-BELT ENGINEERING COMPANY, Richmond, Virginia, has introduced an improved Maxi-Pitch Sheave.



V-Belt Maxi-Pitch Sheave of the V-Belt Engineering Company.

The V-belt sheave now contains an interchangeable split-tapered bushing which, when drawn into the sheave, locks securely to the prime mover shaft, affording practically a press fit. In cases where the shaft of the prime mover has been worn slightly under-size, the tapered bushing locks it tight, thus eliminating wobble or vibration.

The sheave is produced in both stationary and motion control, hand or mechanically operated, without affecting space limitation, since both are the same size.

Other features include maximum pitch diameter variation, constant belt alignment, interchangeable bushings, and use of a commercial V-belt sheave.

Electrical Tape

M-5 THE B. F. GOODRICH COMPANY, Akron, Ohio, developers of Koroseal, have announced a new type of electrical tape made with Koroseal material.

The adhesive is non-transferring, and can be pressed onto a dry surface repeatedly without losing its stickiness. According to the manufacturer, it will not transfer the adhesive from the face, lose its tackiness, or ability to adhere, sticks securely to itself and insulation around copper wire.

The tape has a dielectric strength of 8000 volts, is waterproof, highly abrasion resistant and flameproof, resistant to acids, oil alkalies and corrosive salts. It is packaged in a roll 60 ft long, is 3/4-in. wide, and .007-in. thick.

Industrial Battery Charger

M-6 THE YALE & TOWNE MANUFACTURING COMPANY, 11,000 Roosevelt Blvd., Philadelphia 15, Pa., has introduced a new industrial battery charger for units up to 55 ampere-hour capacity.

Operated on the selenium rectifier principle, the new charger is designed to give simplified maintenance free operation, prolong battery life, and save power. These results are accomplished primarily by an automatic controller which governs the amount of time of charge and a complete lack of moving parts.

The new charger is said to afford identical protection to both new and old batteries, whether fully or partially charged either in cold or warm areas. Temperature compensation is built into the charger.

Available for either lead-acid or nickel-alkaline batteries, the charger can be plugged into any standard



Made to charge batteries (lead-acid or nickel-alkaline) up to 55 ampere-hours capacity, Yale & Towne Manufacturing Company's charger is designed to give simplified, maintenance free operation.

110/115 volt 60 cycle outlet. A step-down transformer is furnished for 220 volt outlets.

Loading Dock Ramp

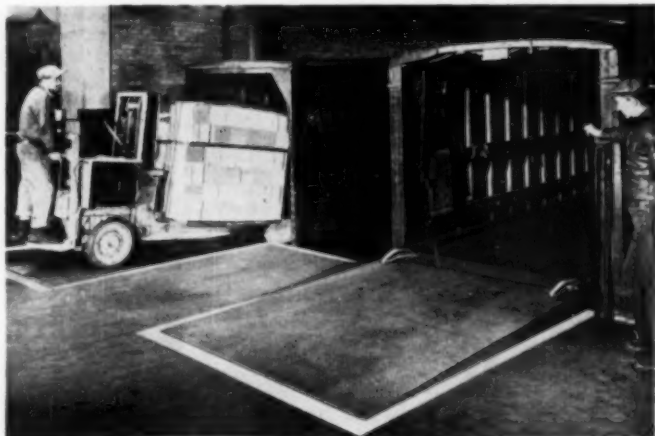
M-7 ROTARY LIFT CO., Box 2177-A, Memphis 2, Tenn., is producing a new adjustable loading dock ramp which features retractable supporting arms and a laterally adjustable throw-over bridge for greater utility and faster operation.

This ramp hinges into the loading dock and is positioned by a hydraulic jack. The retractable supporting arms and laterally adjustable bridge connect the hydraulic ramp to the truck and trailer. Platform automatically

travels up or down to keep level with bed of truck or trailer as truck springs are relieved or compressed during loading or unloading.

Advantages claimed are faster loading with less manpower, fewer accidents, less breakage. Better utilization of loading dock also permits handling of larger volume of materials.

Rotary Lift Company's new Leva-Dock, which makes it possible to load directly into or unload from all types of trucks or trailers, without using steel plates, bridge ramps or other equipment.



Expendable Pallet

M-8 MEAD BOARD SALES, INC., 3347 Madison Road, Cincinnati 9, Ohio, is marketing a new expendable pallet.

Distinctive features of the new pallet are (1) it is made of Mead Chestnut Fibre Board, has a solid smooth deck, and is produced especially for meeting the exacting requirements of pallet handling, packing and shipping; and (2) it has wood supports or legs, instead of paper-product legs.

Steam-Detergent Cleaning

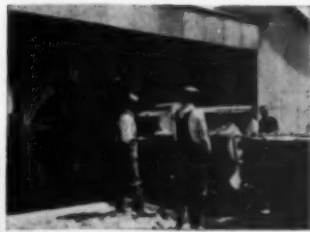
M-9 LIVINGSTONE ENGINEERING COMPANY, 100 Grove St., Worcester 5, Mass., has announced a new Speedylectric steam-jet cleaner built to operate at pressures up to 200 psi.

The combination of this high pressure and the new Speedylectric twin-jet steam lance, with finger-tip control, gives super-jet velocity and powerful cleaning action. Only 16-in. wide and 48-in. long, the new JC-25 is designed for maximum portability in close quarters. It is completely self-contained with space provided on the all-steel truck to mount a water tank of sufficient capacity for three to four hours of continuous operation. The unit uses steam from the built-in high pressure boiler.

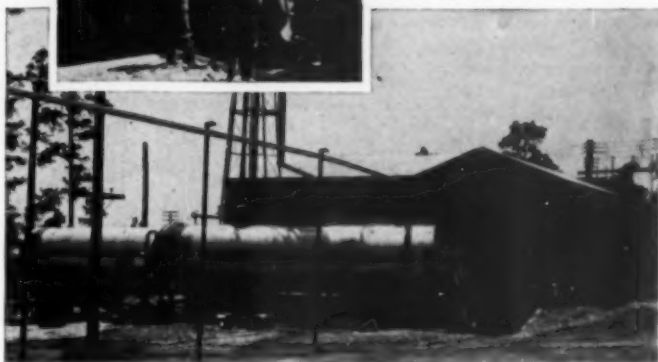
According to the manufacturer, the unit is completely free of low water danger. The boiler water itself is the electric resistance heating element and if there is no water, no current passes and no steam is generated. The equipment is available for 220, 440 or 550 volts. Rated at 20 kw, the unit under ordinary operating conditions consumes 15 kw per hr.



Faster cleaning with Livingstone Engineering Company's Steam-Jet Cleaning accomplished by stepping up velocity of the jet without adding appreciably to electric power requirements.



Temperatures of 200° F. to 350° F. are essential for the pressure-treating of products of the Southern Pine Lumber Company, Diboll, Texas. FOAMGLAS finished with aluminum sheathing insulates the horizontal treating cylinders used in the process. Insulation Contractor: The Abar Company, Inc., Shreveport, La.



Working under pressure... but Hot!

FOAMGLAS — THE CELLULAR GLASS INSULATION

● It takes a really rugged material to insulate these treating cylinders, where lumber products are pressure-treated at extremely high temperatures. But FOAMGLAS is handling the job successfully—and economically—because of its unique physical properties.

Its cellular structure gives FOAMGLAS exceptional insulating ability, which it retains indefinitely. Its high compressive strength resists crushing and breakage. Its inherent resistance to moisture and vapor minimizes the need for expensive weather protection. Its durability practically eliminates costly maintenance and replacement.

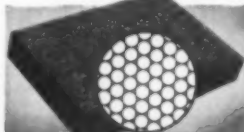
Find out now why so many satisfied users say FOAMGLAS is the most effective and economical insulation, not only for tanks, but also for pipe lines, towers and process equipment. Write for a sample of the material and a copy of our latest booklet. They're both free.

PITTSBURGH CORNING CORPORATION
PITTSBURGH 22, PA.



FOAMGLAS®

the cellular glass insulation



The best glass insulation is cellular glass. The only cellular glass insulation is FOAMGLAS. This unique material is composed of still air, sealed in minute glass cells. It is light weight, incombustible, verminproof. It has unusually high resistance to moisture, chemicals and many other elements that cause insulation to deteriorate.

Pittsburgh Corning Corporation
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Pittsburgh 22, Pa.

Please send me without obligation a sample of FOAMGLAS and your FREE booklet on the use of FOAMGLAS for Piping and Process Equipment.

Name

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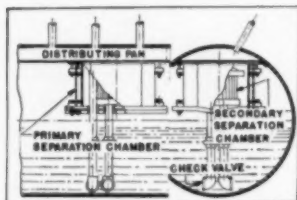
State

BE SURE TO VISIT OUR DISPLAY AT THE 23rd EXPOSITION OF CHEMICAL INDUSTRIES, GRAND CENTRAL PALACE, NEW YORK, NOVEMBER 26 TO DECEMBER 1, BOOTH #643.

new equipment (continued)

Dry Scrubber Purifier

M-10 THE CENTRIFIX CORPORATION, 3608 Payne Ave., Cleveland 14, Ohio, has announced a dry scrubber purifier with two-stage separation designed for use where extremely high quality vapor is required.



Vapor quality of 1.0 ppm or less with The Centrifix Corporation's dry scrubber purifier.

The unit provides internal upflow operation in pressure vessels such as steam drums. Primary stage separation is accomplished by means of a rectangular-shaped anti-turbulence shield. The shield consists of a four-wall chamber with corners off-set and overlapping the ends of the side plates. This construction permits the vapor to

pass around the plates to the secondary separation unit while causing deflection of splashes and spray away from the secondary unit.

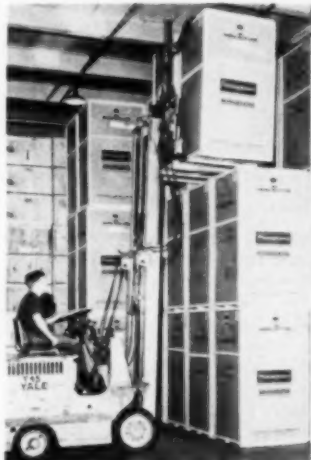
Secondary separation is accomplished by means of either upflow or downflow purifiers enclosed within the anti-turbulence shield. The purifier employs centrifugal and centripetal forces which are said to achieve separation efficiencies of 99.9 per cent or better to provide delivery of clean, dry vapor at all times.

Automatic Clamp

M-11 THE YALE & TOWNE MANUFACTURING CO., PHILADELPHIA DIVISION, 11000 Roosevelt Blvd., Philadelphia 15, Pa., is producing a new automatic clamp attachment for industrial lift trucks that tier refrigerators, ranges, washers, and similar crated and boxed products without the use of pallets.

Available on practically any capacity Yale gasoline powered or electric industrial truck, the device was field tested and installed on a 3000 lb

capacity electric truck. This arrangement provided for two crates weighing up to 450 lb each to be handled. The truck is also equipped with a hydraulic side shifter which permits the load and clamp to be shifted four inches to either side of center.



Hydraulically operated clamp of Yale & Towne handles two objects up to 75-in. high and 36-in. wide each and stacks them 17 ft high simultaneously.

Improved Valve Design

M-12 EDWARD VALVES, INC., subsidiary of Rockwell Manufacturing Company, East Chicago, Indiana, have announced a testing unit which proves complex

factors of low pressure drop and demonstrates the benefits of improved design developments.

Typical test is illustrated. Fluid gages register the pressure drop of a valve of conventional design and that of an Edward valve of streamline de-

sign with the patented Edward Equalizer.

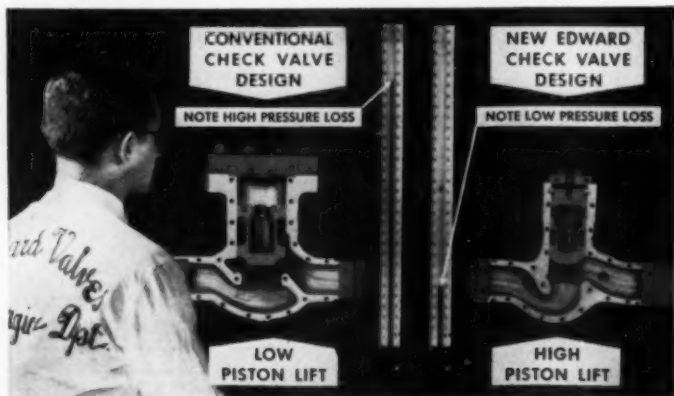
Half section valves, of the check type design as typically used in 900 lb boiler feedwater service, are used in the comparison test. Clear plastic plates cover each valve section so piston travel is visible. Air at a high velocity passes through the valve of conventional design first.

Highlights of the comparison test show the streamlined Edward valve has reduced pressure loss, full lift of the valve piston and significant reduction in size and weight.

Edward research reports these advantages are primarily due to a new shape, which permits greater and freer flow and minimum turbulence, and the patented Equalizer tube. The Equalizer connects the space over the disk-piston, a relatively high pressure area, with the lower pressure area in the valve outlet. Thus, the Equalizer piping relieves the high pressure over the piston.

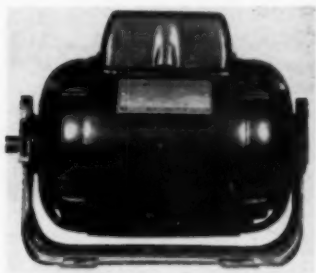
For additional data on new Edward valve designs circle the above code number on the page 17 service coupon post card.

Test unit of Edward Valve shows pressure drop of different valve designs.



Induction Motors

M-13 GENERAL ELECTRIC COMPANY, Schenectady 5, N. Y., is now offering its line of single-phase, capacitor, induction motors with a resilient base construction.



G-E "TRI-CLAD" ball bearing, resilient base, single phase capacitor motor, 1.5 hp, 1800 rpm, 115 and 230 v, 60 cycle, type KSC, 204 frame.

For use where freedom from vibration and extra-quiet operation are required, the construction is available on motors rated from 1/2 hp to 5 hp. According to the company's engineers, all single-phase motors have some torque pulsation, but the resilient base isolates this vibration so that it is not transmitted to the driven machine.

This Tri-Clad motor offers triple protection against physical damage, electrical breakdown, and operating wear and tear. It is of cast iron construction and features a totally enclosed built-in transfer switch to keep foreign matter from the contacts.

It has no brushes or commutators to interfere with radio or television reception. The motor is equipped with long-life lubricated ball bearings.

Except for the 5 hp size, which uses 230 volts only, the new motors operate on 115/230-volt, 60-cycle power supply.

Receiver-type Purifier

M-14 THE V. D. ANDERSON COMPANY, 1935 West 96th St., Cleveland 2, Ohio, has developed a new receiver-type purifier for removing destructive entrainment from vapor lines.

Applications for this unit include protection of turbines, steam engines by removing damaging slugs of entrainment; use in exhaust steam installations where it is necessary to remove oil and other undesirable entrainment; and removing condensate from compressed air systems.

Entrainment laden vapor enters the receiver at the inlet and drops sud-

**BOILERS ARE SAVED BY KNOWING
THE WATER LEVEL.**

Some operators have to guess.
Some need a telescope to see
the gage glass from the floor.
Others have to be satisfied with
an approximation:
BUT

**You KNOW
The Water Level
When you have a**

JERGUSON TRUSCALE GAGE

Model 22 duplicates water level as shown in gage glass at boiler



Available with visible and audible alarms at auxiliary points

Marine Operators: Special installation procedure compensates for roll and pitch of your ship.

THE Jerguson Truscale Gage for remote reading of boiler and other liquid levels is ACCURATE to 1/2 of 1% of scale reading.

It is DEPENDABLE, for it works on hydrostatic heads directly from the boiler drum. Simple in design, with magnet external to manometer system, and feather-light pointer system. All internal moving parts of stainless steel; no stuffing boxes.

Models for any pressure and range; illuminated dial; scale markings and pointer glow in the dark.

Write for full information
on Jerguson Truscale Gages

JERGUSON

Gages and Valves
for the Observation
of Liquids and Levels

Representatives in Major Cities
Phone Listed Under JERGUSON

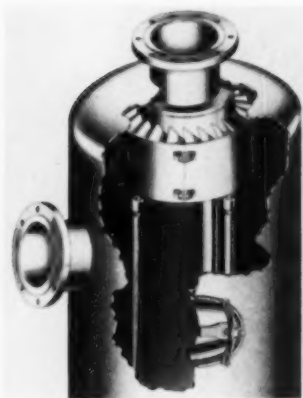
JERGUSON GAGE & VALVE COMPANY

100 Fellsway • Somerville 45, Mass.

European Mfg. Affiliate: Bailey Meters & Controls, Ltd.

new equipment (continued)

For more data circle item code number on the postage free post card—p. 17



No moving parts, self-cleaning action, and careful fluid dynamics in V. D. Anderson's receiver-type purifier.

denly in velocity, causing most of the entrainment to drop to the bottom of the drain. The vapor then passes into a multistage purifier on the inside of the drum which removes virtually all remaining entrainment, discharged by ejects. After leaving the bottom of this purifier, the clean steam passes through the receiver outlet.

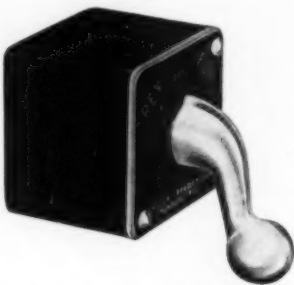
The units have forged steel flanges and welded steel bodies. Various nozzle arrangements are available to meet all piping layouts. They are made in nominal size from 4 to 16 in.

Reversing Drum Switch

ALLEN-BRADLEY COMPANY, M-15 Milwaukee, Wis., has announced a compact new reversing drum switch suitable for a wide variety of mounting arrangements for small workshops and industrial services.

The new unit is said to be the equivalent of a three pole double throw switch. It is small, simply designed, for machines and equipment requiring an economical across-the-line starting and reversing switch for a-c and d-c motors rated at 2 hp or less.

Housing is bakelite and contains eight fixed contacts, a moving contact assembly, handle-coverplate assembly, and mounting screws. Contacts are cadmium silver alloy.



Allen-Bradley reversing drum switch.

Typical applications include drilling machines, lathes, milling machines, and laboratory equipment.

Screw Vise

DE WILDE-JONES, INC., 181 M-17 Steuart St., San Francisco 5, Calif., are marketing a universal screw vise that is said to instantly clamp round, tapered or irregular objects.



Screw vise of De Wilde-Jones clamps round, tapered or irregular objects.

The "Sevo" vise is produced by a Swedish concern. Its jaws consist of a series of machined and ground flat plates which hinge or swivel in any desired direction to coordinate with the shape of the held object. These

Impeller Pumps

DELAVAL STEAM TURBINE Co., Trenton 2, New Jersey, announces a new line of multi-stage opposed impeller pumps designed for general medium pressure

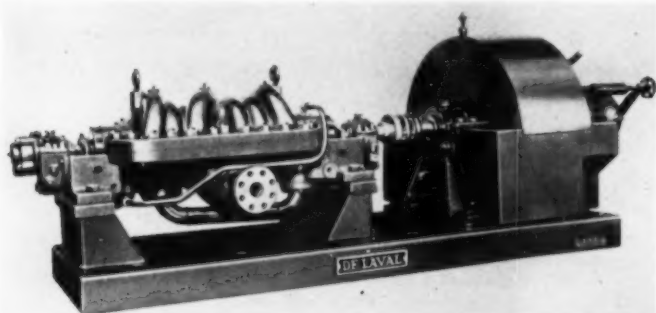
and temperature service up to approximately 1000 gpm and 1200 psi for temperatures to 350-400 F.

Bolted in stuffing box provides a means of applying a plain box with lantern ring for suction lifts; a water cooled box for high temperatures and

high suction pressures; conventional or special, single or double mechanical seals or a breakdown bushing and leak-off arrangement.

According to the manufacturer, the pumps are especially well suited to boiler feed service, oil refinery services for handling liquids ranging from propane to strong caustic and general water services such as descaling, hydraulic and mine drainage.

The "Oppeller" pump has a horizontally split casing with suction and discharge nozzles on opposite sides of the lower half of the casing. Impellers are mounted back to back to balance axial thrust and the volutes are staggered 180 degrees to balance radial thrust.



DeLaval multi-stage opposed impeller pump.

jaws are so designed that they can be moved in relation to each other, and the work piece can rest on a contact surface underneath. By turning the main screw the locking jaws position themselves and can then be locked to retain their directional position.

Vise jaws are made of precision ground Swedish steel. The distance between jaws is 2½ and 5-in., in two sizes.

Square Saw Blade

M-18 CLARK & SAWYER, INC., 602 Mateo Street, Los Angeles 21, Calif., have introduced a complete line of square saw blades.



Squared-Circle Saw Blade of Clark & Sawyer.

Operating on an entirely new cutting principle, the blade, known as the Squared-Circle Saw Blade, is said to handle all types of cross-cutting and rip sawing faster than conventional blades.

The new blade is actually a square with a series of scientifically designed teeth located at each corner of the square. The absence of teeth along the sides of the square means that there is very little friction during the cutting operation. This results in a cooler cutting blade and reduces burned out blades and motors.

The square blade is available in all standard size and shape arbors.

Rotary Pressure Joints

M-19 THE JOHNSON CORPORATION, Three Rivers, Mich., has announced the availability of self-supporting Type S Johnson Joints in heavy duty construction suitable for operating pressures up to 250 lb.

The new type is a specialized variation of the regular rotary pressure joints made by the company. It was developed specifically to combat the threat of misalignment—for service

These
EVERLASTING
advantages

give
better
service
from



Fig. 4001/6561. Duplex unit consisting of Straightway Lever-operated Sealing Valve and Angle Blowing Valve.

BOILER BLOW-OFF VALVES

When you install an EVERLASTING Duplex Blow-Off Unit, you'll find that its many superiorities speak for themselves.

The sealing valve at the left is the EVERLASTING design that has been famous for more than 40 years . . . the valve with the drop-tight seal that actually improves with use because of its self-lapping action each time the valve is opened or closed . . . the valve that can't stick or jam because of its non-wedge design . . . the valve that opens in less than a quarter turn to provide unimpeded straight-through blow.

The blowing valve at the right is the equally famous EVERLASTING Angle or "Y" Valve, specially designed and equipped to withstand repeated blow-off shocks, erosion and corrosion, and without pockets that might trap and hold solids.

Each of these valves . . . and all the other EVERLASTING Boiler Blow-Off valve types, fully meet ASME code requirements . . . assurance that they are properly designed and amply strong for the service.

Write for descriptive bulletin

EVERLASTING VALVE CO.
49 Fisk Street, Jersey City 5, N. J.

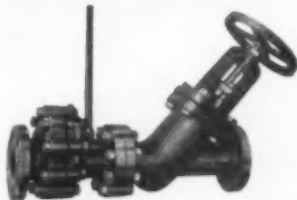


Fig. 4001/6571. Duplex unit consisting of Straightway Lever-operated Sealing Valve and Angle Blowing Valve.



Fig. 6571/6561. Duplex unit consisting of Y Sealing Valve and Angle Blowing Valve.



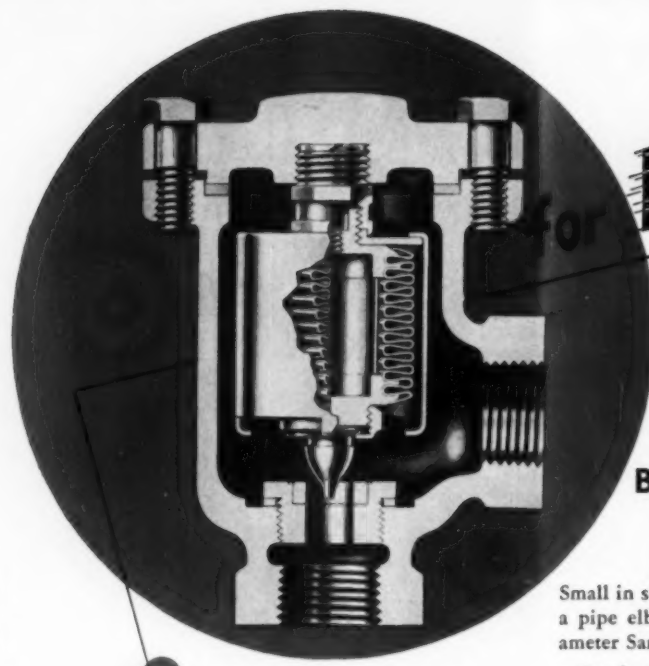
Fig. 6561/6571. Duplex unit consisting of Angle Sealing Valve and Y Blowing Valve.

Everlasting Valves

TRADE MARK "EVERLASTING" REG. U.S. PAT. OFF.

FOR EVERLASTING PROTECTION

EV-340



FAST ACTION

use

SARCO

**BALANCED PRESSURE
THERMOSTATIC
STEAM TRAPS**

Small in size; light in weight, as easy to install as a pipe elbow, these new traps employ large diameter Sarco bellows proportioned to trap size.

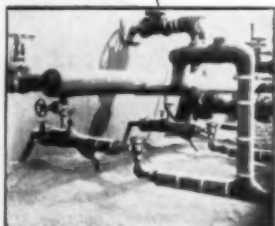
Condensate only a few degrees below steam temperature snaps the large valve wide open. That means rapid and complete venting of air and non-condensables.

It means also exceptionally large condensate capacities.

Actually the balanced pressure type thermostatic trap has the highest discharge capacity per dollar cost.

Other advantages: no seats to change when pressures change (fewer spares to carry); requires no protection against freezing.

Sarco Thermostatic Steam Trap No. 9, available in sizes $\frac{1}{4}$ " to 2" for pressures to 300 psi. Bellows are phosphor bronze, monel or stainless steel as required, shielded from abrasion. Renewable valve heads and seats are of stainless steel.



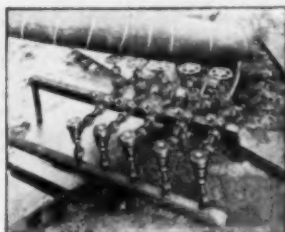
Sarco No. 9-225 traps and strainers draining steam heating coils in crude oil storage tanks.



Sarco No. 9-125 traps and strainers on bottle washer in brewery.

**WRITE for free copy
of new catalog 256**

355



Sarco No. 9-300 traps and strainers removing air and condensate from steam tracer lines maintaining asphalt to storage tanks at pumping temperature.

SARCO COMPANY, INC.

EMPIRE STATE BUILDING, NEW YORK 1, N. Y.

SARCO CANADA LTD., TORONTO 5, ONTARIO

REPRESENTED IN PRINCIPAL CITIES

new equipment (continued)

For more data circle item code number on the postage free post card—p. 17

on machines such as calenders where considerable lateral movement of rolls is encountered.

It retains in full the packless, self-lubricating and self-adjusting features of the standard joints. The rotating member consists of only one part—a nipple which is connected directly to the roll or drum. This nipple has a convex, hemispherical collar which rotates against a matching concave surface of a special carbon-graphite seal ring.

Pressure itself acts as the sealing force—fills the entire housing and forces the seal ring tightly against the collar. A spring is provided in the joint, but this serves only for initial seating.

The rear portion of the nipple serves as a bearing surface, and is carefully machined. It rotates in a large carbon-graphite guide, which in turn is fitted carefully inside the body. It is this construction which supports the joint, permits it to shift as the roll shifts, so there is no danger of misalignment.

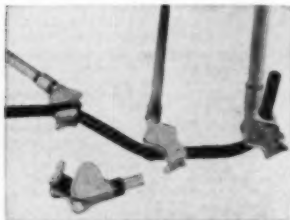
The joint is available for either through-flow or syphon pipe service.

Bending Tool

M-20

TAL BENDER, INC., Milwaukee 2, Wis., has developed a new bending tool which can be used in six different directions.

The new Tal 6-Way Hickey with its six bending jaws is useful for making bends, elbows, sets, offsets, loops, saddles and stubs on open or slab work and in close quarters. The stub hole is a new feature devised for bending or straightening conduit protruding from concrete floors or walls. The long neck extends into the pipe handle to prevent accidents caused by the pipe handle breaking.

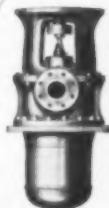


Six-way bending tool of Tal Bender, Inc.



SPECIFY

Pacific
Precision Built **PUMPS**



PACIFIC TYPE WBF

CENTRIFUGAL BOILER FEED

You Specify — The capacity, temperature and pressure.

Pacific Will Specify — The most efficient size and the correct materials.

You Will Receive from Pacific — A custom built pump with pressure castings, hydrostatic tested... each part precision finished and inspected... one-piece impellers, dynamically balanced... performance tested and shipped with parts protected with rust inhibitor.

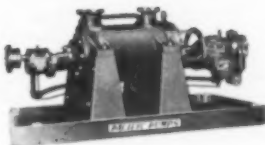
Write for Bulletin No. 109.

Pacific Pumps inc.

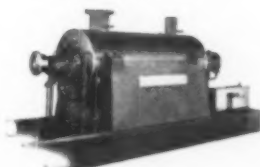
ONE OF THE DRESSER INDUSTRIES

HUNTINGTON PARK, CALIFORNIA

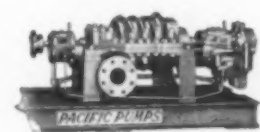
Export Office: Chanin Bldg., 122 E. 42nd St., New York • Offices in All Principal Cities



PACIFIC TYPE ABF



PACIFIC TYPE BFB



PACIFIC TYPE JBF

BF-13

NEWS for the South and Southwest

New Piston Ring Manufacturer Producing in Fort Worth, Tex.

In addition to 1-in. to 30-in. Safety Seal Rings, the SAFETY SEAL PISTON RING Co., 2800 West Lancaster, FORT WORTH 1, TEXAS, is manufacturing practically all other types of industrial piston rings including plain rings and oil rings required by stationary units, railway locomotives and marine equipment.

WM. S. BAKER, designer and manufacturer of industrial piston rings for over 33 years, is president of the firm. Associated in the business are Baker's two sons, WELDON BAKER, as sales manager, and DON BAKER, as assistant sales manager.

WM. S. Baker is a mechanical engineer and former railway master mechanic. He has been responsible for the invention and development of four major improvements in piston rings for industrial applications, including



Wm. S. Baker, president, The Safety Seal Piston Ring Co., Fort Worth, Texas.

the first practical one-piece sealing ring. For a number of years he served as chief engineer with the Double Seal Ring Co., before leaving that firm two years ago to set up his own organization.

The Safety Seal Piston Ring Com-

pany is specializing in the manufacture of the Safety Seal ring, a new and improved single-piece sealing ring. Check item number M-1 in the New Equipment section of this issue for design data.

Coastal Engineering Conference—Houston

DEAN A. MCGEE, executive vice president of the KERR-MCGEE INDUSTRIES in OKLAHOMA, has accepted the chairmanship of the SECOND ANNUAL NATIONAL CONFERENCE ON COASTAL ENGINEERING at HOUSTON, Nov. 7 to 10, Conference Secretary CHARLES E. BALLEISEN of SOUTHWEST RESEARCH INSTITUTE has announced.

Attorney General Price Daniel of Texas will speak on some phase of the tidelands question at the dinner Nov. 7, and the program will include talks by some of the best known authorities on coastal engineering, oceanography and meteorology.

Full information on the meeting is available from Southwest Research Institute which is sponsoring the conference together with a number of universities, colleges and professional and technical organizations in the area.

FUTURE EVENTS Of Engineering Interest

COASTAL ENGINEERING CONFERENCE. Charles E. Balleisen, Conference Sec'y, c/o Southwest Research Institute, 8500 Culebra Road, San Antonio 6, Texas.

Nov. 7-10, Second Conference on Coastal Engineering, Rice Hotel, Houston, Texas.

PETROLEUM ELECTRIC POWER ASSOCIATION. c/o Ted Workman, City National Bank Bldg., Dallas, Texas.

Nov. 19-20, 23rd Annual Meeting, Shamrock Hotel, Houston, Texas.

NATIONAL GASOLINE ASSOCIATION OF AMERICA. John Kindle, Chmn. Program Committee, Lone Star Producing Co., Dallas, Texas.

Nov. 26, Panhandle-Plains Regional Meeting, Herring Hotel, Amarillo, Texas.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS. C. E. Davies, Sec'y, 29 West 37th St., New York, N. Y.

Nov. 25-30, Annual Meeting, Chalfonte-Haddon Hall, Atlantic City, N. J.

AMERICAN CHEMICAL SOCIETY EXPOSITION. Charles F. Roth, Mgr., International Exposition Co., Grand Central Palace, New York 17, N. Y.

Nov. 26-Dec. 1, 23rd Exposition of Chemical Industries, Grand Central Palace, New York, N. Y.

PLANT MAINTENANCE SHOW. Clapp & Pollak, Inc., 341 Madison Ave., New York, N. Y.

Jan. 14-17, 1952, Industrial Exposition, Convention Hall, Philadelphia, Pa.

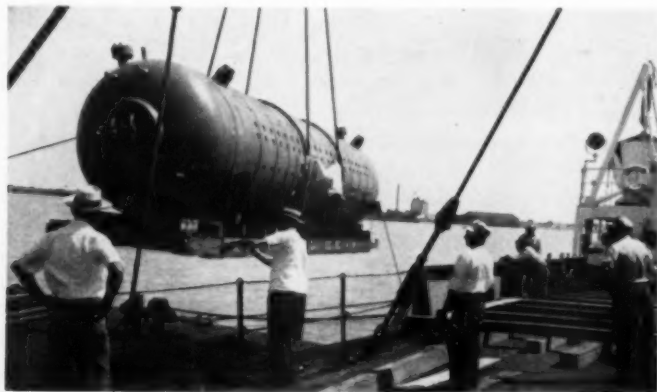
New Orleans Boiler Drum Shipment

THIS fusion-welded steam drum for one of two steam generating units being built for the Nantes-Chevire Power Station of the Electricite de France is being loaded in New Orleans. Drum, fabricated in the Chattanooga, Tennessee, shops of Combustion Engineering-Superheater, Inc., is 72 in. in diameter, 33 ft, 4 in., in length and weighs more than 65 tons.

ECA funds are being used for first

portion of the station, which will have an ultimate capacity of 500,000 kw. At the present time, two 50,000 kw turbine-generators and two boilers, each rated at 500,000 lb/hr are being installed. Superheater outlet conditions are 1330 psig and 986 F.

Combustion Engineering is responsible for the design of the steam generating units and is supplying the principal pressure parts and tilting tangential burners for coal firing.



P.E.P.A.—Houston

The 23rd annual meeting of the PETROLEUM ELECTRIC POWER ASSOCIATION will be held Nov. 19 and 20 at the Shamrock Hotel in Houston, Texas.

P. E. P. A. is an organization of electric power companies formed for the purpose of rendering greater service, through cooperative effort, to the petroleum industry.

Plant Maintenance Conference

The third PLANT MAINTENANCE CONFERENCE will be held concurrently with the PLANT MAINTENANCE SHOW at Convention Hall, Philadelphia, Jan. 14-17.

Thirty-four separate discussions will be conducted. More than 100 experts, drawn from industrial firms all over the country, will lead the panels.

General conferences will consider basic problems of all industry while sectional meetings will be devoted to specialized subjects of interest to particular industries.

Advance registration cards and hotel information may be obtained from Clapp & Poliak, Inc., 341 Madison Ave., New York 17, N. Y.

Hill-Chase Steel—Baltimore

THE HILL-CHASE STEEL COMPANY OF MARYLAND, INC., 6501 Erdman Ave., Baltimore, Md., held open house at its newly completed warehouse on October 26.

The new warehouse comprises 40,000 sq ft of space. It is of modern fireproof construction, and was built at a cost of \$250,000.

Officers of the company include: JOHN J. HILL, Pres.; JOHN J. HILL, Jr., Vice President; ROBERT M. FINLEY, Secretary; WILLIAM E. HILL, Treasurer and General Manager; WILLIAM S. PATTERSON, Manager of Sales; FRANK W. BOUGHER, Manager Order Department; and WARREN SHAFER, Warehouse Superintendent.

Dowell—Tulsa, Shreveport

Several employees of DOWELL INCORPORATED have been promoted to new positions in the organization.

In the General Office in TULSA, JAMES REED has been made Development Engineer in the Service and Product Development Department. ROY BOSTICK has been promoted to

Sales Development Engineer in the Sales Department.

At SHREVEPORT, PAUL S. CLINKENBEARD and DALE BENEFIELD have been named District Sales Engineer and Sales Engineer respectively.

Westinghouse Lamp Div.—Texas

WESTINGHOUSE LAMP DIVISION has announced that HARRY A. HOLDEN, with 22 years experience in lamp manufacturing, has been appointed

manager of the new PARIS, TEXAS plant that will start production by the end of 1951. The headquarters will be in Bloomfield, N. J., until that time.

Since 1929 when he joined the Company as an apprentice toolmaker Mr. Holden has been a master mechanic in the wire products department of the Bloomfield Lamp Division, and superintendent and manager of the Westinghouse Belleville, N. J. lamp base and electronic tube manufacturing plant.



Powerhouse Cement is the star performer in the Baldwin-Hill review of Black Rockwool insulating materials... a quick-drying, low shrinkage finishing cement that insulates. Consider these advantages for a leading role in your next plant improvement picture:

- Effective to 1700°F.
- One coat... points, seals, insulates
- No wire mesh... high adhesion to blocks, blankets, or plastic cement
- Linear shrinkage less than 1%
- Finishes and insulates... figure its thickness as part of the insulation
- Amphibious... withstands a drenching rain two hours after application
- Takes oil or water base paint direct

therm-enomics[®]
PRESENTS
**POWERHOUSE
CEMENT**
"the Finishing Cement that Insulates"
BH

Popular Powerhouse is only one of a complete line of B-H Black Rockwool insulating materials—block, blanket, cements, etc. Let a Baldwin-Hill representative recommend the types and methods of application best suited to your equipment... show you how to reduce heat loss on the job—THERM-ENOMICALLY.*

*Economics of Engineered Heat Control

IF IT'S TOO HOT
TO TOUCH

IT NEEDS
INSULATION

**Black
Rockwool**

Baldwin-Hill

0130

clip this coupon and attach to your signed letterhead
SEND ME COMPLETE INFORMATION ON:

- ☐ Mono-Block—for temperatures to 1700°F
- ☐ Blankets—metal reinforced, large-area coverage to 1200°F
- ☐ No. 1 Cement—plastic insulation, to 1800°F
- ☐ Powerhouse Cement—high-adhesion finishing to 1700°F

BALDWIN-HILL CO., 607 BREUNIG AVE., TRENTON, N. J.

RELIANCE WATER COLUMNS

for any working steam pressure assure you the *utmost in Dependability*

SINCE 1884, Reliance has maintained leadership in Boiler Safety Device development and manufacture. Water Columns with automatic Alarms, operated by the original *instantaneous* alarm mechanism, have helped to fortify power plants against the consequences of boiler water failure for billions of operating hours. Alarms are available on columns for pressures to 900 psi.

For higher pressures, Reliance standard and custom-built equipment embodies principles of design and construction perfected in 67 years of specializing in this field — "super-tugged" Water Columns built with a generous extra margin of safety.

Selected as standard equipment by many boiler manufacturers and consulting engineers, Reliance Water Columns exceed the requirements of national and state code authorities. Check with your consultants or ask for our nearest engineer representative.



The name that introduced safety water columns in 1884

Reliance®

BOILER SAFETY DEVICES

Iron Fireman—Atlanta

E. V. CROSSIN has been promoted to manager of the Southern Region for the IRON FIREMAN CORPORATION. Crossin has been district sales manager in the Southern Region for Iron Fireman since 1947. He will make his headquarters at the company's Southern Regional office in ATLANTA, GEORGIA.

Acme Steel—Southeast

Two key changes in the ACME STEEL sales staff have just been announced by Mr. W. S. HUSS, Southern area sales manager.



William G. Polley

Acme's district sales manager in Atlanta.

WILLIAM G. POLLEY, southern area special representative, has been appointed district sales manager at ATLANTA, GA. He fills the position vacated by the death of Clarence A. Carrell. Bill Polley has been a member of Acme Steel Company since 1924, serving on the Southern area sales staff for 21 years. He will now be in charge of sales in ALABAMA, FLORIDA, GEORGIA and TENNESSEE.



Charles R. Lammers

new Atlanta sales representative.

Replacing Mr. Polley as Southern area special representative is CHARLES R. LAMMERS. Transferred from Buffalo, N. Y., Bob Lammers had previously operated in the Southern area as a sales representative for two and one-half years. Joining Acme Steel in 1939, he has also served as laboratory assistant and sales engineer.

Rust Engineering Mobile

A new bulk-handling conveyor system to provide additional ore-handling facilities for the Alabama State Docks and Terminals in MOBILE, ALA., is being installed by THE RUST ENGINEERING COMPANY, of Birmingham, and Pittsburgh, at a cost of \$750,000.

Incoming ore will be received from the unloading towers by the new system of conveyors and transferred to a shipping-out bin or to bulk storage.

The new conveyor system will tie into the existing conveying system which was installed in 1939. In 1949, the firm completed transit shed construction for three new ships' berths for Alabama State Docks at a cost of \$1,400,000, which increased storage facilities at the Port of Mobile by over 24 per cent.

Georgia Power Co.—Rome

THE GEORGIA POWER COMPANY will build a huge new steam-electric generating plant near ROME, Harlee Branch, Jr., president, announced recently.

Mr. Branch said the new plant will have an initial capacity of 200,000 kilowatts or about 270,000 horsepower. It will be located on a tract of 350 acres ten miles west of Rome on the Coosa River. The tract lies on state highway 20. Mr. Branch said the plant will cost more than \$20,000,000.

The new plant will be named in honor of W. P. HAMMOND, vice president in charge of engineering of the Georgia Power Company. Mr. Hammond, who has had 38 years of service, has played a major role in the engineering of the company's North Georgia hydroelectric plants, as well as the company's modern steam-electric generating plants.

The Furman Shoals plant near Milledgeville will be named in honor of B. W. SINCLAIR, superintendent of production, who has been in the service of the company for 39 years and is in charge of the construction and operation of its power plants.

Work on the Rome plant will begin in the fall. The first unit of 100,000 kilowatts will be completed in October, 1953, and the second unit, of equal size, will go in service in January, 1954. Mr. Branch said the Coosa plant can be expanded to three, four or even more units when the demand for electric power makes such expansion necessary.

The plant will turn out about 1,400,000,000 kilowatt hours a year, enough electricity to supply the needs of more than half a million average Georgia homes.



Track and switches with spur tracks over welding booths for easy spotting of heavy loads in booths.

Railmaster 3-ton crane serves the paint shop area and interlocks via track curves with crane serving the sand blast room. Interlocking track is equipped with opener to allow for door closure.



Compact track and crane system over the electrical shop area. Note hand chain drop section on extreme left, which lowers a hoist carrier for service or repair.

MONORAIL REDUCES *Maintenance Costs*

In this, one of the country's largest maintenance shops, American MonoRail Overhead Handling Equipment serves the entire department. Included in the department are: machine shop, electrical repair, metalizing room, welding, painting and sand blast room, pipe shop, and inside and outside storage. This plant has shown a definite increase in efficiency and a great reduction in handling costs.

Let an American MonoRail engineer show you how you can cut handling costs and save valuable floor space.

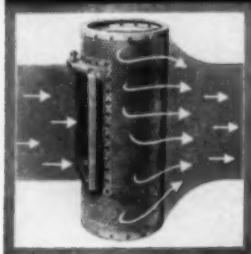
WRITE FOR C-1 BULLETIN

THE AMERICAN **MONORAIL** COMPANY

13105 ATHENS AVENUE

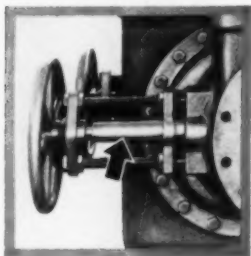
CLEVELAND 7, OHIO

How ELLIOTT TWIN STRAINERS *cut costs*



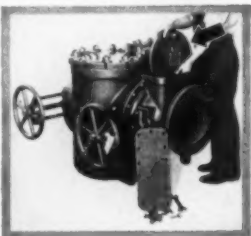
Very low pressure drop

due to streamline flow, with no corners to cause eddies or checks, and almost no deviation from a straight-through course. Big baskets help, too, and also reduce maintenance by fewer cleanings.



Quick-visible valve position indicator

tells instantly which of the twin chambers is working, by the position of the valve shaft which covers or uncovers the valve screw. No liquid touches the valve screw, which therefore can be lubricated.



Easy parts replacement

Without dismantling the valve, the disc can be taken out for ultimate replacement of inexpensive rubber valve disc ring. For extremely corrosive or abrasive conditions, valve seats are provided with a "wear plate" which can easily be replaced. Twin Strainers have indefinite life.

Many thousands of Twin Strainers in power plants, process plants, ships, and all industries needing non-stop clearing of liquids, have long demonstrated their sound qualities. Now redesigned for even better performance and lower operating cost. You will want the details—Bulletin A-13 on request.



ELLIOTT COMPANY

Accessories Dept., JEANNETTE, PA.

Plants in JEANNETTE, PA. • RIDGWAY, PA.

AMPERE, N. J. • SPRINGFIELD, O. • NEWARK, N. J.

Metals Disintegrating—S.E.

The appointment of THE CHARLES L. BURKS CO., BLACK MOUNTAIN, NORTH CAROLINA as distributors of MD Aluminum Pastes and Powders and MD Gold Bronze Powders, has just been announced by METALS DISINTEGRATING CO., INC., Elizabeth, New Jersey, manufacturers of metal pigments, metal powders and metal abrasives.

The territory to be covered by this appointment includes the states of VIRGINIA, NORTH AND SOUTH CAROLINA, FLORIDA and specific counties in WEST VIRGINIA and GEORGIA. Territory coverage will be supplemented by the activities of G. PRESTON SCOTT, located at TAMPA, FLA.

New President for Ingalls

KENNETH H. GAYLE, JR., former vice-president in charge of sales of THE INGALLS IRON WORKS COMPANY, Birmingham, Alabama, has been elected president of the company succeeding the late R. I. Ingalls, Sr.



Kenneth H. Gayle, Jr.,
new president of Ingalls
Iron—Birmingham.

Mr. Gayle joined the Ingalls organization in 1923 soon after his graduation from The Virginia Military Institute. Prior to taking charge of Ingalls' New Orleans office in 1925, he was an engineer in the Birmingham office.

Mr. Gayle opened Ingalls' New York office in 1927, then moved to Pittsburgh to establish a branch fabricating plant at Verona. He later returned to New York and since has been in charge of the area served by that office.

Mr. Gayle will make his headquarters at the executive offices of the company in Birmingham.

Nordberg Manufacturing Appointment

Appointment of BRUNO V. NORDBERG as Sales Engineer, Four-cycle Engine Department is announced by R. W. Bayerlein, Vice President, Heavy Machinery Division, NORDBERG MANUFACTURING COMPANY, Milwaukee 7, Wisconsin.

A native of Wisconsin, Nordberg is a grandson of the founder of Nordberg Manufacturing Company, Bruno V. Nordberg, and son of Bruno V. E. Nordberg who was Executive Engineer of this company at the time of his death in 1946.

After his early schooling, Nordberg attended the University of Wisconsin and majored in mechanical engineering. With the advent of World War II he enlisted in the Navy and in 1943 he was assigned to Marquette University. During his senior year at Marquette he was student chairman of A. S. M. E. and was named to Pi Tau Sigma, honorary engineering fraternity.

Mr. Nordberg graduated from Marquette as a mechanical engineer in 1944 and after two years of further naval service in an engineering capacity, was discharged in 1946. In that year he joined Nordberg and was assigned as a test and erection engineer in the Heavy Machinery Division. He was later transferred to engineering installation, a position retained until his recent appointment.

St. Joe Paper Expansion

Nearly \$2½ million of General Electric equipment has been ordered by the ST. JOE PAPER COMPANY as part of an expansion program designed to increase kraft board production at its PORT ST. JOE, FLORIDA, mill by 850 tons a day.

The expansion, expected to cost more than \$20 million, will center around installation of a new 236-in. Fourdrinier operating over a 400-to-2000-fpm speed range, and a new regenerative tension winder.

Power demands will be met by two G-E turbine generator sets, one rated at 10,000 kw and the other at 12,500 kw. A General Electric multiple generator sectional drive will be used for the paper machine. This drive will include seventeen d-c, 1150-rpm, separately-ventilated motors ranging from 60 to 500 hp; four auxiliary motors for the Fourdrinier section; three motor-generator sets, each driven by a 1250 hp synchronous motor, and

BELMONT GASKETS

**SEAL BETTER...
LAST LONGER**



**MOLDED, FORMED, EXTRUDED,
DIE or LATHE CUT . . .**

in sizes, shapes, and forms to meet every requirement. You can get Belmont standard and special design gaskets made of compressed asbestos, woven asbestos, metallic, red rubber, cloth inserts, black rubber, vegetable fibre, cork-vegetable fibre, gray rubber, neoprene, and a wide variety of compounded materials.

And, Belmont complete manufacturing facilities assure dimensional accuracy, uniform thickness and top quality finish.

Whether your gasket problem is . . . temperatures . . . pressure . . . vibration . . . shock . . . oxidation . . . corrosion . . . creep . . . reduction or just a matter of gasket size and shape, if you want **BETTER JOINT AND SURFACE SEALING . . . longer gasket service life — TRY BELMONT.**

Distributors located in every large industrial center to serve you. Write for catalog #40.

. . . And, there's a Belmont Packing for Every Service.

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4-5-4

**FOR STEAM, WATER, OIL, GAS, AIR,
ACIDS, ALKALIES, AMMONIA.**

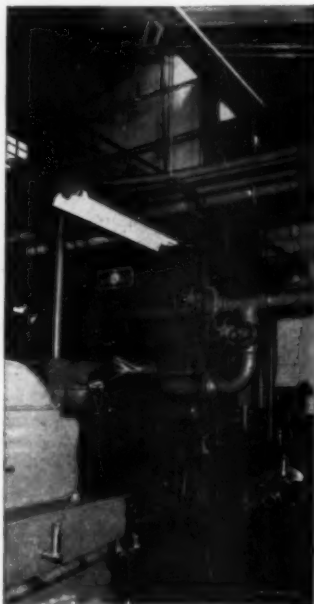
RINGS, SPIRALS, COILS, REELS, SPOOLS, SHEETS, GASKETS

You Get Trustworthy Liquid or Gas Cooling With Great Cooling Water Savings from the **NIAGARA AERO HEAT EXCHANGER**

● You can cool air, gas, water, oils, chemicals, electric and power and process equipment, engines, mechanical processes with lower cost and really accurate control of temperature with the Niagara Aero Heat Exchanger.

You are assured of uniform, constant production and quality from any process . . . steady, reliable operation . . . lower cost for more dependable cooling. You can have closed system cooling with freedom from scale, dirt, corrosion and maintenance troubles. You can accurately cool more than one type of liquid with one machine.

The Niagara Aero Heat Exchanger uses atmospheric air to cool liquids and gases by evaporative cooling. You can remove heat at the rate of input to keep accurate control of gas or liquid temperature. You can put heat back into the system to save the losses of a "warm-up" period or to equalize the effect of load variations.



Great savings in cooling water and savings in piping, pumping and power return the cost to you quickly. The Niagara Aero Heat Exchanger can save you approximately 95% of your cooling water cost. Write for Bulletin 96.

NIAGARA BLOWER COMPANY

Over 35 Years Service in Industrial Air Engineering

Dept. SP, 405 Lexington Ave.

New York 17, N. Y.

Experienced District Engineers in all Principal Cities

electronic amplidyne control for each drive section.

The 226-in., 5000-fpm winder will utilize two 250 hp, d-c motors and a 250 hp braking generator. G. E. also will supply metal clad switchgear, 16 unit substations ranging from 1000 to 3750 kva, and a 10,000-kva bus tie transformer.

The increased output of kraft board will be used by the St. Joe firm in its manufacture of boxes. The new facilities are expected to be in operation by the fall of 1952.

SASI Announces New Officers

THE SOUTHERN ASSOCIATION OF SCIENCE AND INDUSTRY has announced that a Mississippi chemist, a Louisiana utility executive, a Virginia research director, an Alabama professor, and a Georgia banker will serve as its principal officers for the 1951-52 term. The new officers, who assumed their duties October 1, are: M. P. ETHEREDGE, Dean of Science, Mississippi State College, President; H. R. HANMER, Director of Research, American Tobacco Co., Richmond, Vice-President; A. B. PATERSON, Chairman of the Board, New Orleans Public Service, Vice-President; GEORGE D. PALMER, Professor of Chemistry, University of Alabama, Secretary; ALVA G. MAXWELL, Vice-President, Citizens and Southern National Bank, Atlanta, Treasurer.

The new president, Dr. M. P. Etheredge, is well-known throughout the nation for his work in the field of agricultural chemicals. He is the current president of the Association of American Feed Control Officials, and has previously served as president of the Food and Drug Officials of the South Central States.

Vice-president Hanmer is well-known as the director of research of the American Tobacco Company in which capacity he has been responsible for the scientific development and manufacture of Lucky Strike cigarettes.

Vice-president Paterson is known as an outstanding engineer and as a leader in commercial and civic activities. He has served as Chairman of the Louisiana Department of Commerce and Industry, President of the New Orleans Chamber of Commerce, and has headed numerous charitable, cultural, and patriotic activities.

Secretary Palmer, first president of SASI, is professor of organic chemistry at the University of Alabama. He has served as SASI Secretary for

the past nine years. It was his report, "Scientific Research—the Hope of the South," which in 1940 stimulated the organization of SASI and led to the development of numerous scientific activities in the region.

Treasurer Maxwell is a past-president of the Financial Public Relations Association. In his present position he supervises the financing of new business enterprises throughout the Southeastern area. This is his second term as treasurer of SASI.

The outgoing president of the Association is DR. PAUL W. CHAPMAN, Dean of the College of Agriculture of the University of Georgia. He will remain a member of the Association's Executive Committee.

The Southern Association of Science and Industry is a non-profit, non-political regional organization founded in 1941 to promote the economic and industrial development of the South through application of science to the utilization of the resources of the region. A central research office is maintained at 5009 Peachtree Rd., Atlanta, Ga., from which SASI publications covering Southern industrial and scientific progress are issued. Director of the Association is H. MCKINLEY CONWAY, JR., Editor of *The Journal of Southern Research*.

Southern Alkali Changes Name

The corporate name of SOUTHERN ALKALI CORPORATION has been changed to COLUMBIA-SOUTHERN CHEMICAL CORPORATION. A wholly-owned subsidiary of PITTSBURGH PLATE GLASS COMPANY, the firm is a producer of soda ash, chlorine, caustic soda and related chemicals. Plants are located at Barberton, Ohio; CORPUS CHRISTI, TEXAS; NATHRIUM, WEST VIRGINIA; LAKE CHARLES, LOUISIANA and Bartlett, California.

Swartwout—Houston

THE SWARTWOUT COMPANY, Cleveland, Ohio, manufacturer of power plant, process control and ventilating equipment, announces the opening of a new sales office in Room 674, M&M Building, HOUSTON, to service the TEXAS area.

J. B. DOWNEY, Swartwout sales engineer, will manage the power plant and process control divisions, while WILLIAM A. SHARP of Houston will be in charge of roof ventilator sales engineering and service.

SPECIALLY DESIGNED for EASIER INSTALLATION and LONGER SERVICE



Fig. G611, IRBM Wedge Gate Valve, Working Pressure: 125 lbs. Steam, 200 lbs. WOG.

KENNEDY JOB-FITTED

Iron-Body Wedge Gate Valves

YOU SAVE TIME AND MONEY all along the line with Kennedy iron-body wedge gate valves because they are **JOB-FITTED** . . . every valve specially designed and engineered for the job it has to do.

THE WEDGE DISC is a cored casting of thick metal section, reinforced by integrally-cast interior posts and provided with openings to drain in any position.

HEAVY BRONZE DISC RINGS are forced into dovetailed grooves in the disc in a practically inseparable construction.

HIGHER STRENGTH IRON in the body and bonnet is actually 50% stronger than ordinary cast iron . . . and far exceeds A.S.T.M. requirements.

ALL CONTACT SURFACES between moving parts are bronze-to-bronze to assure easy operation.

RUSTPROOFED STEEL BOLTS AND NUTS have ample clearance to prevent distortion. Open-end wrenches may be used . . . no need for special tools. Valves can be repacked under full pressure.

EVERY FEATURE of the valve helps it do the job better . . . gives you a solid guarantee of economy and dependability whenever you install one of these Kennedy Job-Fitted Wedge Gate Valves.

BUY FROM YOUR LOCAL DISTRIBUTOR

WRITE FOR BULLETIN 107



THE

KENNEDY
VALVE MFG. CO. • ELMIRA, N.Y.

VALVES • PIPE FITTINGS • FIRE HYDRANTS

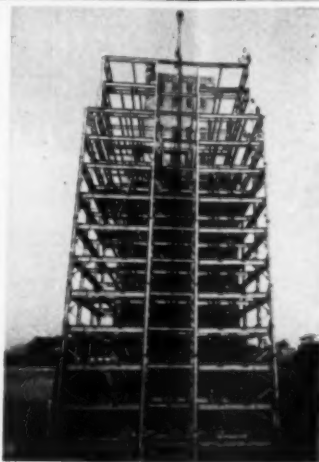
INGALLS

specialists in steel fabrication

OFFICE BUILDINGS

If there is an office building in your plans we invite you to talk with us about all-welded design—both shop and field. Whether it's two floors or twenty we can save you money and speed up erection time. The recognition of Ingalls specialized experience in all-welded steel construction has helped to make it the nation's largest fabricator of steel. Ingalls is a good company to tie to!

The Alabama Power Company office building annex is a product of Ingalls know-how.



THE INGALLS IRON WORKS COMPANY BIRMINGHAM, ALABAMA

Sales Offices: New York — Chicago — Pittsburgh

Plants: Birmingham — Verona, Pa. — Decatur, Ala. — Pascagoula, Miss.

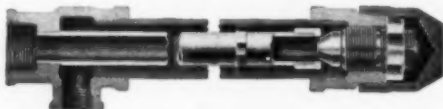
Nicholson Expansion Steam Traps SAVE \$155 PER UNIT for Large Processor

Because of their positive effectiveness in temperature control work, Nicholson expansion steam traps, at about \$35 each, are being installed by a leading processor in place of temperature controls. These were costing them \$110.00 to \$200.00, with cost of a trap added. Per installation, the saving is about \$155.00.

This firm is finding an increasing number of applications on tanks, stills, heating radiators, etc., where Nicholson expansion steam traps are serving as both trap and temperature controller.

Catalog 751 or see Sweet's

Because there is only one moving part, remarkably low maintenance costs are being shown. Easily installed, usually without supports. Lengths, 18" to 40". Pressures, 0 to 250 lbs. No air binding.



For All Equipment Using Steam or Hot Water

Radiators
Separators
Paper Machinery
Pipe Coils
Kettles
Railway Coaches

Dry Kilns
Vulcanizers
Switch Heaters
Laundries
Plastic Molding
Presses

W. H. NICHOLSON & CO.

TRAPS · VALVES · FLOATS

175 Oregon St., Wilkes-Barre, Pa.

Cleco—Louisville

THE CLECO DIVISION of the REED ROLLER BIT COMPANY, HOUSTON, TEXAS, has announced the appointment of LOUISVILLE MILL SUPPLY COMPANY, LOUISVILLE, KENTUCKY, as distributor for Cleco products in their area.

Cleco manufactures the Cleco and Dallett lines of air tools and accessories—including tools for construction, manufacturing, metal fabrication, foundries, industrial maintenance and stone carving.

Pan-Am Southern—New Orleans

The first major unit for production of coke from petroleum crude oil in the Gulf Coast area will be constructed by PAN-AM SOUTHERN CORP. at its Destrehan refinery which is located in the NEW ORLEANS area.

The unit will produce each month about twenty-million pounds of coke vitally needed for aluminum production.

A contract has been awarded to THE LUMMUS CO., designing engineers and constructors, to build the new 240 feet coker. The new coker will be so designed as to process either heavy crude oil or the "heavy bottoms" from an adjacent refining unit processing light crude. The facilities will charge approximately 9000 barrels daily of these feed stocks and will convert this heavy material into gasoline, light gas oils and coke. The primary purpose of the coking unit is to produce high yields of gas oil which may be further processed in the catalytic cracking unit to high octane aviation or motor gasoline.

Work will start within a few weeks on the unit which is in addition to the multi-million dollar construction project which began in August at Destrehan. Pan-Am is already building a catalytic cracking unit, fluid hydrofomer, alkylation unit and vapor recovery unit at Destrehan.

Sheffield Steel—Houston

A new electric furnace, one of the largest in the United States, has been placed in service at the HOUSTON plant of SHEFFIELD STEEL CORPORATION.

The new furnace, a Pittsburgh Lectromelt with a 20-foot shell and rated capacity of 75 tons, will boost ingot capacity of the Houston mill to approximately a million tons a year.

It will be charged with scrap metal. Annual ingot production of the new facility will be approximately 500 tons per day or 150,000 tons annually.

Here Are the Locations Of Wage-Hour Offices

Contact the nearest field office of the Wage and Hour Administration for interpretation of wage, salary and bonus regulations. Field offices in the South and Southwest are:

DELAWARE and MARYLAND—406 Old Town Bank Building, Fallsview and Gay Streets, BALTIMORE 2, Md.

ALABAMA, FLORIDA, GEORGIA, MISSISSIPPI, NORTH CAROLINA and SOUTH CAROLINA—4th Floor Title Building, 15 Auburn Avenue, S.E., ATLANTA, Ga.; 1401 Hampton Street, COLUMBIA 1, S. C.; 425 1/2 S. State Street, JACKSON 8, Miss.; 456 New Post Office Building, JACKSONVILLE 1, Fla.; 715 Dade-Commonwealth Building, 139 N. E. First Street, MIAMI, Fla.; 445-447 U. S. Court House and Custom House Building, MOBILE, Ala., and Room 207, Industrial Building, 35 Bull Street, SAVANNAH, Ga.

KANSAS and MISSOURI—3000 Federal Office Building, 911 Walnut Street, KANSAS CITY 6, Mo.; 2nd Floor, 1102 East Douglas Street, WICHITA, Kan., and 324 Old Custom House, 815 Olive Street, ST. LOUIS 1, Mo.

ARKANSAS, LOUISIANA, NEW MEXICO, OKLAHOMA and TEXAS—413 U. S. Court House Annex, Fifth and Gold Streets, ALBUQUERQUE, N. M.; 420 Fidelity Building, 1000 Main Street, DALLAS, Texas; 516 Banner Building, 221 N. Mesa Avenue, EL PASO, Texas; 1109 Burk Burnett Building, 502 Main Street, FORT WORTH, Texas; 210 East Harrison Street, HARLINGEN, Texas; 703 Federal Office Building, HOUSTON 14, Texas; 203 Reed Music Co. Building, 112 1/2 East 7th Street, LITTLE ROCK, Ark.; 1723 Masonic Temple Building, NEW ORLEANS 12, La.; 508 Oklahoma Natural Building, 3rd and Harvey Streets, OKLAHOMA CITY 2, Okla.; James K. Building, 417 South Main Avenue, SAN ANTONIO, Texas, and Medical Arts Building, 624 Travis Street, SHREVEPORT, La.

KENTUCKY, TENNESSEE, VIRGINIA and WEST VIRGINIA—321 Embleton Building, 922 Quarrier Street, CHARLESTON, W. Va.; Fidelity Bankers Trust Co. Building, 502 South Gay Street, KNOXVILLE, Tenn.; 1008 Columbia Building, 401 W. Main Street, LOUISVILLE 2, Ky.; 715 M and M Building, 198 South Main Street, MEMPHIS, Tenn.; Presbyterian Building, 152-154 4th Avenue North, NASHVILLE 3, Tenn.; 205 West Grace Street, RICHMOND 19, Va., and 2nd Floor, 25 1/2 West Church Avenue, ROANOKE, Va.

DISTRICT OF COLUMBIA—Room 1513, Tempo V, WASHINGTON, D. C.

A. O. Smith—Houston

ALFRED E. TREEN has been appointed manager of personnel and purchasing at the HOUSTON WORKS of A. O. SMITH CORP., succeeding F. B. Dunn who has resigned from the company. C. R. RIGBY is manager of the Houston plant.

Mr. Treen has been with A. O. Smith's personnel administration staff since November, 1946. In his function as manager of purchasing, Mr. Treen also will be responsible for all traffic activities, including the receiving department.

Flexitallic Agents

FLEXITALLIC GASKET COMPANY, Camden, New Jersey, recently announced the addition of six new agents to its field organization.

The new agents include: JNO. D. HILES CO., INC., PITTSBURGH, for western Pennsylvania and eastern Ohio and portions of WEST VIRGINIA; ENGINEERING PRODUCTS CO., CHARLESTON, W. VA., for WEST VIRGINIA, eastern KENTUCKY, and part of Ohio; CHAPMAN ENGINEERING SALES CO., Cincinnati, for southwestern Ohio and northern KENTUCKY; DE HAVEN ENGINEER-

ING CO., Indianapolis, for Indiana and western KENTUCKY; STEEL & ENGINEERING PRODUCTS CO., EL PASO, TEX., for southwestern TEXAS, southern New Mexico and Arizona.

Westinghouse Motors for Rolling Mill

THE WESTINGHOUSE ELECTRIC CORPORATION has been awarded a contract for more than \$900,000 by the LONE STAR STEEL COMPANY for auxiliary electrical drive equipment for the company's new universal slabbing mill at LONE STAR, TEXAS.

The 45-in. by 80-in. mill will be equipped with dual gearing and clutch arrangements so that it can be used to reduce ingots to slabs, or slabs to plates. It will operate at a maximum rolling speed of 944 fpm.

The Westinghouse equipment consists of 28 adjustable-voltage auxiliary drives, 38 constant-voltage, direct-current auxiliaries, and 14 alternating-current auxiliaries, with a combined rating of 6,245 hp.

A pair of 200 hp motors will operate the screwdowns for slabbing mill operations, and a pair of 75 hp motors will be used for plate mill operation.

Slabs and plates produced in the



Tube Stocks and Bending

BOILER TUBE CO. OF AMERICA

McKEES ROCKS, PA.

(Pittsburgh District)

PITTSBURGH
CHICAGO

FRED S. RENAULD & CO.,
LOS ANGELES

JEFFERSON

300 LB. Trouble Free Unions for Tough Jobs

JEFFERSON Unions are made of Air Furnace Malleable Iron of an average tensile strength of 55,000 p.s.i., with a yield point of 36,000 pounds and an elongation of 15% in two inches.

Our seat rings are cut from seamless drawn brass tubing, free from all casting defects—sound and uniform always.

They are accurately tapped at all times; are carefully air tested and inspected before shipment, and each and every one approved only if they meet our rigid standards of inspection.

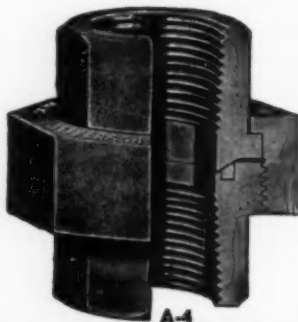
Slightly Higher Priced
But more than worth it.

See these outstanding features—

- ★ A ground ball joint to give leak-proof service
- ★ Octagonal with square corners fits any type of wrench
- ★ No gasket required, hence no maintenance problem
- ★ Hot-dip galvanized to Government Standard for corrosion resistance

Made in all thread sizes from 1/4" to 4" American Standard Taper Threads.

Also manufacture Excel 250 lbs and Master 150 lbs. All unions can be furnished with all-iron seats.



JEFFERSON UNION CO.

650 WEST 26th St., NEW YORK 1
79 GOODING ST., LOCKPORT, N. Y.
45 FLETCHER Ave., LEXINGTON, MASS.

new mill will be further processed by Lone Star Steel Company in a four-high reversing hot strip mill. The main roll drive and auxiliary drive equipment for this mill also will be supplied by Westinghouse under the terms of a prior contract.

The electrical equipment for the new slabbing and plate mill will be delivered to the mill site in mid-1952.

Borg-Warner—Memphis

Prime and sub-contracts totaling \$2,363,510, for the manufacture of parts for light and medium tanks, have been awarded to the MEMPHIS plant of MECHANICS UNIVERSAL JOINT DIVISION of BORG-WARNER CORPORATION.

The tank parts will be made in a new \$3,000,000 30,000 sq ft plant already under construction. The new plant will employ about 300 persons. M. S. VAUGHN, resident manager of original plant here, will also direct the operation in the new factory, which is expected to be completed in mid-December, 1951.

Vaporization-Cooled Transformer Developed

A VAPOR-COOLED, vapor-insulated transformer that is expected to be 1/4 to 1/3 lighter than liquid-immersed units of equivalent rating and performance is being developed by the Westinghouse Electric Corporation. The new cooling technique—utilizing the heat of vaporization of liquid fluorocarbons for cooling and the dielectric strength of fluorocarbon vapor for insulating—is a joint development of the Transformer Division and the Research Laboratories.

High-molecular-weight fluorocarbons—a new family of synthetic compounds—are sprayed on the core and coils. Fluorocarbons show great promise for vaporization cooling. They have a suitable boiling point and heat of vaporization and they have a high dielectric strength and impulse strength at low pressures.

Two vaporization-cooled transformers have been constructed and operated. The first experimental unit was a modified standard dry-type transformer. Second was a specially constructed 500 kva, 2400/240 v transformer, which has been operating at rated load since the first of the year. A vaporization-cooled network trans-

SSIRCO Personnel Changes

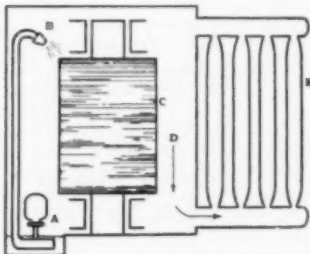
Several personnel changes have been announced by SOUTHERN STATES IRON ROOFING COMPANY, building material manufacturer and distributor with general offices in SAVANNAH, GEORGIA.

E. W. BEALL, JR., has been promoted from COLUMBIA, S. C., Branch Manager to Savannah District Manager. He will be in charge of sales for the firm's branches in COLUMBIA, S. C.; SAVANNAH, GA.; AUGUSTA, GA.; ALBANY, GA.; and JACKSONVILLE, FLA.

E. O. WITHERINGTON, manager of the Albany branch, has been transferred to Columbia to replace Beall as branch manager. C. T. BRISBOIS, assistant manager at Albany, moves up to the branch manager's position.

B. E. SHEA has been advanced from Savannah Branch Manager to Director of Savannah Operations. He will direct the overall operations of the company's Savannah, Augusta, and Jacksonville branches. In addition, Mr. Shea will continue to hold the position of Naval Stores Sales Manager.

former is being designed for installation on a utility system. From the operation of this unit will come valuable service experience.



How Vaporization Cooling Works— A small pump (A) forces liquid fluorocarbon from sump to nozzle (B) where the liquid is sprayed uniformly over the core and coils. The liquid evaporates (C), taking its latent heat of vaporization from the coils. The fluorocarbon vapor fills the space in the tank (D), insulating the transformer parts. The vapor is forced upward through the cooling tubes, and as it condenses the condensate flows by gravity back to the sump. Condensation is accompanied by only a small change in the temperature of the fluorocarbon, which remains near the boiling point throughout the system. The temperature of the cooling surfaces is only a few degrees Centigrade lower than that of the coils, the differential being much less than in conventional liquid-immersed units.

Books for the Plant Engineer

New Lessons in Arc Welding

PUBLISHED BY THE LINCOLN ELECTRIC COMPANY, 12818 Coit Road, Cleveland 17, Ohio

6 x 9 inches—312 pages

Price, \$1.00

"New Lessons in Arc Welding" contains material which has been added to a series of lessons which form the basis of instruction in The Lincoln Arc Welding School.

Two types of courses are included: The basic course in the fundamentals of arc welding, which is devoted entirely to the welding of mild steel in all positions; and the advanced course in alloy welding, sheet metal welding, and pipe welding.

Ultrasonics

By P. VIGOREUX

PUBLISHED BY JOHN WILEY & SONS, INC., 440 4th Ave., New York 16, N. Y.

6 x 9 inches—163 pages

Price, \$4.00

The object of the book "Ultrasonics" is to introduce the scientist or student to the technique and to the simpler aspects of the theory of propagation of ultrasonics in fluids. The author stresses the principles used, rather than detailed descriptions of apparatus or of experimental procedure. The theoretical treatment is as simple as possible, consistent with the explanations of phenomena available to date.

The chapters on propagation, gases, and liquids deal with theory and results; those on generation and observation mostly with apparatus and methods.

LPG Specifications and Test Methods (NGAA Publications 2140)

PUBLISHED BY NATURAL GASOLINE ASSOCIATION OF AMERICA

422 Kennedy Building, Tulsa 3, Okla.

8 1/2 x 11 inches—32 pages

Price, \$1.00

The new edition contains all the generally accepted specifications and test methods for LP-Gases. The booklet contains two new methods, "LPG Corrosion Test" and "LPG Sampling Methods." A former separate publi-

cation "LPG Specific Gravity Test (Hydrometer Method)" is included.

All tests have been revised to give them greater accuracy and duplicability and to make them more usable. Some of the more noticeable changes are in the apparatus used in the vapor pressure, propane residue, and weathering tests. Other revisions are largely editorial.

The Nature of Polyphase Induction Machines

By PHILIP L. ALGER

PUBLISHED BY JOHN WILEY & SONS, INC.

440 4th Ave., New York 16, N. Y.

6 x 9 inches—224 pages

Price, \$5.50

"The Nature of Polyphase Induction Machines" presents the principles of electromagnetic phenomena and circuits.

The author carries the concept of energy being received, stored, and transformed, and delivered through all aspects of motor performance. Formulas are given for reactance, power factor, torque, and magnetic forces; and methods for calculating

locking, crawling, magnetic noise, and voltage ripples are provided. The results are presented in algebraic formulas and equivalent circuits, with few symbols, and references to more specialized articles.

Thermodynamics

By GEORGE A. HAWKINS.

PUBLISHED BY JOHN WILEY & SONS, INC.

440 4th Ave., New York 16, N. Y.

6 x 9 inches—563 pages.

Price, \$6.50.

The second edition of "Thermodynamics" is a presentation that encourages the reader to analyze an actual system by first studying an ideal system and then deciding how well the ideal predicts the behavior of the actual. A good balance is maintained between theory and simple practical applications. Emphasis is placed on correct use of units in the solution of problems, with illustrations by examples throughout the book. The author endeavors to show the reader, through discussions and examples, the use of the subject in areas of engineering and science other than his own.



ONLY ONE MOVING PART

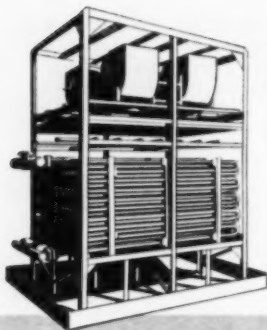
in a Squires STEAM TRAP

Over the long pull, Squires Steam Traps are the LEAST EXPENSIVE to own and operate. These are the reasons why: (1) There is only ONE moving part—the bucket hinge. (2) The larger capacity in both orifice and bucket mean fewer discharges, less wear. (3) You don't have to break main line connections to get at the valve and seat. You can't beat Squires for economy of operation. It is one steam trap you can INSTALL and FORGET. Write today for complete details. Ask for Catalog No. 100. Write us concerning traps for testing purposes.

IN MANY INDUSTRIES FOR OVER 40 YEARS . . .
DEPENDABLE SQUIRES TRAPS ARE IN DAILY USE

Steel — Pulp & Paper — Meat Packing — Public Utilities — Steam Ship — Distilling — Food Processing — Textile — Oil — Chemical — and many others.

THE C. E. SQUIRES COMPANY
Over 50 Years of Dependability
18532 SYRACUSE AVE. — DEPT. B-1 — CLEVELAND 10, OHIO



Step Up Condenser Efficiency

Slime and lime scale are the natural enemies of condenser efficiency. They form insulating deposits on coils, preventing water spray from contacting coil surfaces . . . they clog up spaces between coils, restricting proper air flow.

Here's how to beat slime and scale. First, add a little Oakite Composition No. 22 to water supply and operate until free of slime. Circulate Oakite Compound No. 32 through spray nozzles to remove scale. Finally, treat your water with Oakite Aircleaner No. 52 to prevent further slime and scale build-up.

Results? Condensers operate at top efficiency.

FREE BOOKLET F7383 gives details. Get your copy today. Write Oakite Products, Inc., 23A Thames St., New York 6, N. Y.

SPECIALIZED INDUSTRIAL CLEANING
OAKITE
MATERIALS • METHODS • SERVICE

Technical Service Representatives Located in
Principal Cities of United States and Canada

Catalogs and Bulletins

(Continued from p. 18)

Free additional information is available to readers of Southern Power & Industry. Check item number on the postage free service coupon post card—page 17.

B-10 CONDUIT AND CABLE FITTINGS

—Bulletin No. 65, 64 pages—Lists electrical conduit fittings and cable fittings for all types of raceways including locknuts; bushings; elbows; pipe straps; conduit supports; connectors and couplings for rigid conduit, for EMT, for armored cable, for non-metallic sheathed cable and for service entrance cable; grounding equipment; service entrance fittings; floor boxes and junction boxes; tubelets; and bending tools. Illustrated.—THOMAS & BETTS CO., INC., Butler St., Elizabeth, N. J.

B-11 REFUSE OR COAL BURNING

STOKERS—Catalog No. 305, 24 pages—Burn Refuse or Coal, separately or in combination. Detroit Stokers' illustrates and describes the company's RotoStoker of the stationary grate type for small boilers; hand-dumping grate type for small and medium boilers; power-dumping grate type, also for small and medium boilers; and spreader stokers. Includes typical application photographs and engineering data.—DETROIT STOKER COMPANY, General Motors Bldg., Detroit, Mich.

B-12 FOUR-CYCLE DIESEL

—Bulletin 191, 12 pages—Describes and illustrates the Suprathermal engine, a four-cycle Diesel, Duafuel or spark-fired gas unit with the ability to produce, in any given size, one-third more horsepower than the conventional turbocharged engine. Illustrated.—NORDBERG MANUFACTURING CO., Milwaukee 7, Wis.

B-13 SPEED REDUCERS

—Pocket-Size Catalog, 36 pages—'Abart Speed Reducers and Gearmotors' gives complete engineering data on how to select the proper speed reducer to fit requirements, including horsepower ratings, ratios and installation graphs.—ABART GEAR & MACHINE CO., 4834 West 16th St., Chicago 50, Ill.

B-14 METAL CLEANING

—Booklet, 44 pages—"Some Good Things to Know About Metal Cleaning" discusses soils resulting from metal-fabricating processes and describes specific materials, equipment and procedures for the removal of these soils. Illustrated.—OAKITE PRODUCTS, INC., 123A Thames St., New York 6, N. Y.

B-15 OPEN STEEL FLOORING

—Booklet A.I.A. 14-F-21, 16 pages—Installation photographs show many and varied possibilities for using steel grating. Types and features are explained. Includes specifications and installation data.—OPEN STEEL FLOORING INSTITUTE, INC., 2311 First National Bank Bldg., Pittsburgh 22, Pa.

B-16 RECORD PROTECTION

—Folder 82 707, 4 pages—"The Cost of Burned Records" points out the pitfalls of inadequate record protection. Shows measures in equipment and methods available to insure protection. Illustrated.—REMINGTON RAND INC., 315 Fourth Ave., New York 10, N. Y.

B-17 EXPANSION JOINTS

—Catalog, 40 pages—Contains over 75,000 possible combinations of bellows type expansion joints, and complete line of aircraft bellows and assemblies. Illustrates diversified line of standard and special bellows assemblies used to take up expansion, contraction and offset movements in pipes and conduits.—SOLAR AIRCRAFT COMPANY, 2509 Pacific Highway, San Diego 12, Calif.

B-18 DIESEL ENGINES

—Bulletin No. FV-63, 24 pages—Illustrates and describes Type FV diesel engines, 6-8-12 cylinders, atmospheric and supercharged, four cycle, bore 9 in. stroke 10 1/2 in., including applications, design features, specifications.—THE COOPER-BESSEMER CORPORATION, Mt. Vernon, Ohio.

B-19 METAL SPRAYING GUNS

—Bulletins 94 and 95, 4 pages each—No. 94 describes the Metco Type 42 gun for high-speed spraying with all metals. No. 95 describes Type 5E gun for corrosion protection (sprays 3/16 in. wire—weighs only 4 1/2 lb.). Illustrations, application data, and design features are included.—METALIZING ENGINEERING COMPANY, INC., 35-14 30th St., Long Island City 1, N. Y.

B-20 FUSION WELDING OF NICKEL

—Bulletin T-2, 44 pages—Technical treatise on fusion welding of nickel and the high nickel alloys covers various forms of electric arc welding as well as gas welding. Includes tables, drawings, and photographs.—THE INTERNATIONAL NICKEL COMPANY, Technical Service Section, 67 Wall St., New York 5, N. Y.

B-21 MATERIALS HANDLING EQUIPMENT

—Bulletin 50A, 4 pages—Covers portable conveyor-loader-stacker. Chart shows dimensions. Specification data includes motors, belting, wheels, locks, guards, couplings, optional equipment.—THE E. W. BUCHMAN COMPANY, Clifton & Spring Grove Ave., Cincinnati 32, Ohio.

B-22 CABLE CONNECTIONS

—No. 8 Twecol, 12 pages—Describes and illustrates Tweco electrode holders, terminal clamps, cable connectors, terminal connectors, cable splicers, mechanical and solder type cable lugs, carbon electrode holders, and the new "Lug-Set" block and punch for attaching solder type lugs to cables without solder.—TWECO PRODUCTS COMPANY, P. O. Box 666, Wichita, Kansas.

B-23 PROCESS INDUSTRIES

—Catalog, 20 pages—"IS&B in the Process Industries" covers special fabrication services, immersed coil and direct fired heaters, bolted and welded steel tanks, walkways and stairways. Contains an expanded section on control equipment. Illustrated.—BLACK, SIVALLS & BRYSON, INC., 7500 East 12th St., Kansas City 8, Mo.

B-24 STORAGE BATTERIES

—Data Sheet, 2 pages—Explains how to return to service motive power storage batteries which have lost capacity due to "sulphation" (formation of lead sulphate on positive and negative plates due to continued undercharging or prolonged idleness)—GOLD-NATIONAL BATTERIES, INC., Trenton 7, N. J.

B-25 FORCED DRAFT FANS

—Bulletin No. 8, 8 pages—Describes design features of The Prat-Daniel Corporation's new forced draft fans, including explanation of the split wheel for four-way diffusion. Illustrates various types of fan-wheels and housings.—THE THERMIX CORPORATION, Greenwich, Conn.

B-26 INDUSTRIAL BURNERS

—Bulletin No. 781, 36 pages—Illustrates industrial oil burners, gas burners, combination gas and oil burners, for boilers, dryers, stills, retorts, kilns. Covers fuel oil pumping and heating units.—NATIONAL OIL BURNER COMPANY, 1279 E. Sedgely Ave., Philadelphia 24, Pa.

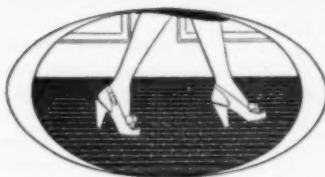
B-27 CORROSION CONTROL

—Bulletin No. 5013, 4 pages—Covers control of return line corrosion, including causes and treatment. Includes test procedures for two methods of corrective treatment. Illustrated.—DEARBORN CHEMICAL COMPANY, Merchandise Mart Plaza, Chicago 64, Ill.

B-28 CONCENTRATOR

—Bulletin 119, Series "A"; Bulletin 118, Series 6600, 2 pages each—New "No-Frost" concentrators are illustrated and described. Application and equipment photographs. Comparative

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B-29 SILICONES—Reprint, 4 pages—Savings through use of the company's silicone grease and silicone insulation are explained and illustrated with plant photographs. In reprint from the "Dew Diamond."—**DOW CORNING CORPORATION**, Midland, Mich.

B-30 INDUSTRIAL INSTRUMENT—Booklet, 10 pages—An instrument known as the OPGC Gas Dust Analyzer, Recorder and Alarm designed to record the amount of total suspended solids or dust particles in gas streams in grains per cu ft is described. Photograph and charts are included.—**GENERAL POWER PLANT CORP.**, 381 Fourth Ave., New York 16, N. Y.

B-31 PIPING EQUIPMENT—Catalog No. 51, 95 pages—Covers adjustable pipe hangers, vibration eliminators and supports. Design, operation, and application are pictured and described. Price list included. Send request on business letterhead.—**BLAW-KNOX COMPANY**, Power Piping Division, 1525 Pennsylvania Ave., Pittsburgh 12, Pa.

B-32 CONVEYORS—Bulletin No. 15, 8 pages—Illustrates complete line of roller and wheel conveyors. Gives conveyor specifications and tells how to determine plant requirements. Application photographs.—**THE E. W. BUSCHMAN COMPANY**, Clifton & Spring Grove Aves., Cincinnati 22, Ohio.

B-33 RUBBISH INCINERATOR—Catalog, 16 pages—Covers rubbish incinerator erected in 4 standard sizes, and portable incinerator manufactured in 4 sizes. Includes special incinerators for other applications. Illustrated.—**PLIBRICO JOINTLESS FIREBRICK CO.**, 1500 Kingsbury St., Chicago 14, Ill.

B-34 CORK PRODUCTS—Bulletin 1h/D, 4 pages—Describes characteristics and industrial uses for cork compositions and natural cork. Tables give physical properties, sheet sizes and Dodge equivalents of government specifications for cork compositions, and standard taper cork sizes. Illustrated.—**DODGE CORK COMPANY, INC.**, Lancaster 19, Pa.

B-35 CUTTING TOOLS—Form 651, 6 pages—Illustrates and describes the Hole Saw, in a wide range of sizes for cutting metals, wood, plastics, and other materials for factory production and installation purposes.—**WISENER MFG. CO., INC.**, 262-E Walton St., Syracuse 2, N. Y.

B-36 FEEDERS AND CONVEYORS—Catalog 188, 24 pages—Electric vibrating feeders and conveyors for handling and controlling the flow of solid materials in many industries are catalogued with equipment and application photographs and line drawings.—**THE JEFFREY MANUFACTURING COMPANY**, 898 North 4th St., Columbus 16, Ohio.

B-37 VALVES AND FITTINGS—Catalog O, 60 pages—Ammonia and Freon Valves and fittings for use in industrial refrigerating, ice-making, and air conditioning are catalogued and illustrated. Prices are included.—**FRICK COMPANY**, Wayneboro, Pa.

B-38 WATER HAMMER—Bulletin No. WH-851, 8 pages—Covers cause, effect, and control of water hammer in piping systems. Explains potential damage and discusses method of controlling it. Gives results of tests to determine effects check valves have in overcoming water hammer. Illustrations and photographs.—**THE WILLIAMS GAUGE COMPANY**, 1629 Pennsylvania Ave., Pittsburgh 32, Pa.

B-39 STUD WELDING—Bulletin, 4 pages—Detailed specifications and performance characteristics of two power units designed to improve and extend the advantages of stud welding are given. Methods of application are discussed. Illustrated.—**NELSON STUD WELDING**, Division of Morton Gregory Corp., Toledo Ave. and East 28th St., Lorain, Ohio.

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(Continued from page 53)

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of the ownership, management and circulation required by the Act of Congress of August 24, 1912, as amended by the Acts of March 2, 1932, and July 2, 1946 (Title 35, United States Code Section 223) of SOUTHERN POWER AND INDUSTRY, published monthly at Philadelphia, Pa., for October 1, 1951.

State of Georgia, County of Fulton, ss.
Before me, a Notary Public, in and for the State and County aforesaid personally appeared E. W. O'Brien, who having been duly sworn according to law, deposes and says that he is the Managing Director of SOUTHERN POWER AND INDUSTRY, and that the following is to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 2, 1932, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form to-wit:

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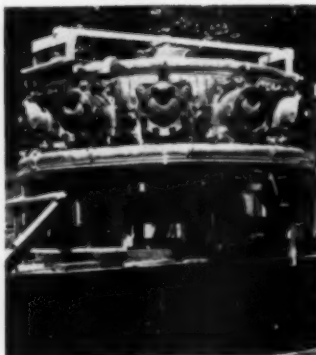
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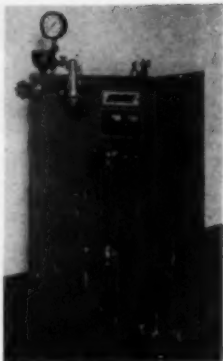
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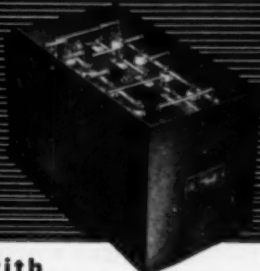
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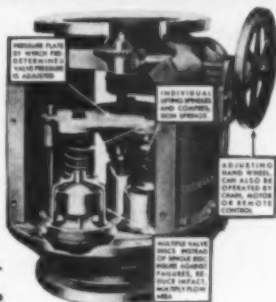
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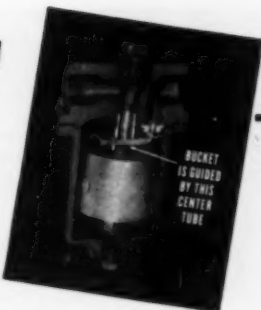
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Power House and Process Piping at new 60-acre Pfizer Plant equipped for years ahead with

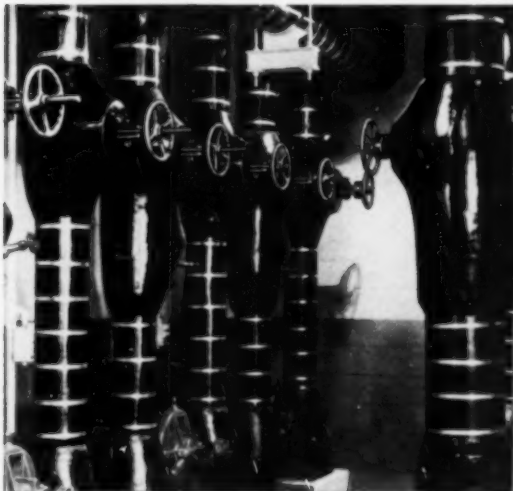
At Groton, Connecticut, the new plant of Chas. Pfizer & Co., Inc., provides additional capacity to meet mounting demands for this company's fine chemicals and antibiotics.

In Pfizer's continuous process manufacture of these products, the dependability of the heat and power supply is vital. That is why you'll find Jenkins Valves in the new power plant, and, in fact, throughout the intricate network of process pipelines.

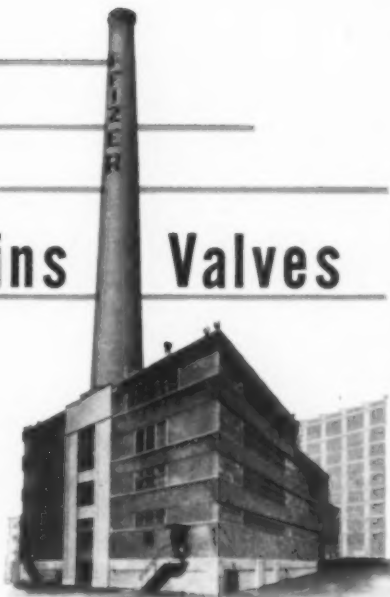
Because the power demand is endless, it requires—even in normal times—unfaltering efficiency of all component equipment. And because operating economy depends on *continued* efficiency in the years ahead, Jenkins Valves have long been the choice of the men who plan, build, operate, and maintain the nation's vital power installations.

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Large Jenkins Gate Valves on pipelines serving the 12-step Pfizer process of synthesizing a stable form of crystalline Vitamin A, the first produced on a commercial scale.

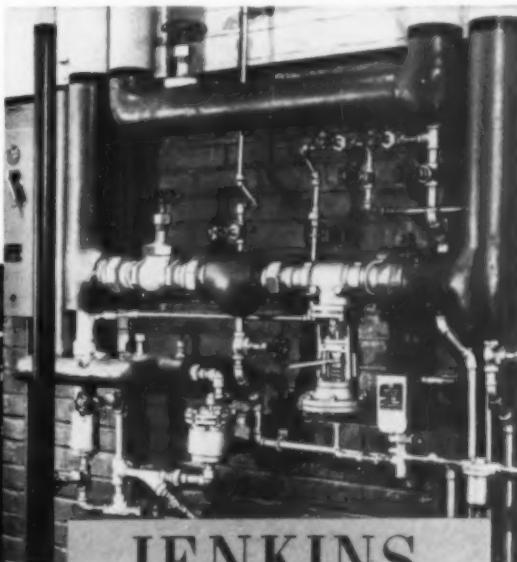


Jenkins Valves



General Contractors, W. J. BARNEY CORP. Piping Contractors, J. H. MERRITT CO.

Some of the Jenkins Valves installed in the Pfizer power plant. Its rating is 230,000 lbs. per hour from two oil-fired boilers.



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SCREEN FILTERS: In less than three hours, Dowell Service removed 90% of deposits from filters used to screen river water for a 48" strip mill.

WATER SOFTENER: Approximately 18 inches of hard calcium carbonate piled up in the bottom of a water softener's deaerating compartment. In less than one day, Dowell Service thoroughly cleaned compartment.

FILTER BEDS: The backwash rate on an anthracite filter was reduced to 75 gallons per minute by accumulated deposits. After Dowell Service, backwash rate was increased to an effective 385 gallons per minute.

ION EXCHANGE BEDS: Iron oxide clogged an ion exchange water softener. Before cleaning, two pumps were required to provide pressure for adequate back wash. After Dowell Service, one pump was sufficient.

FEEDWATER LINES: Before cleaning, it was necessary to use three 100 horsepower pumps to force water through clogged feedlines to a boiler house. Following Dowell Service, only one pump was required.

PUMP: Two high pressure feedwater pumps were nearly clogged with deposits. Dowell service completely cleaned them along with rest of the feedwater system.

WATER WELL: Before treatment, a water well produced only 108 gallons per minute with a 35' drawdown. After Dowell acidizing, water flow increased to 450 gallons per minute with a 27' drawdown.

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